# SUPPLEMENT.


# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE:

**FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.**

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## Royal School of Mines, Jermyn-Street.

### Mr. WARINGTON SMYTH'S LECTURES.

[FROM NOTES BY OUR REPORTER.]

Lecture XLII.—Having thus discussed the various methods in which the minerals were to be worked out of the places in which they were deposited, and to which access was gained by shafts and levels, the next question that arose (postponing for the present the means of supplying air to the workmen, &c.) was the conveyance of mineral from the place where it was taken down, either to the surface or to the bottom of the shaft, from whence it would be raised by machinery. Sometimes minerals had to be raised at once to surface by drifts, but in the generality of mines the minerals had to be brought from the remote parts and conveyed by subsidiary roadways to the principal ones. Amongst the various methods in vogue some were of the most simple character, whilst others required the introduction of very superior machinery. Thus, carrying mineral by human hands was a plan which looked extremely rude and primitive, but there were circumstances under which that plan was still to be seen on a considerable scale. In Chili and Peru the mineral was conveyed in lumps or in baskets by Indian labour, but even there better systems were introduced, where there was sufficient regularity of working. It was also employed in other districts, where there was less excuse for it, such as in Spain and some other continental countries, where the mineral was carried long distances in baskets by boys. Some allowance, however, must be made for these southern countries, as a great deal of carrying was done above ground, as well as in mines, by baskets, for carrying which the labouring classes appear to have a great aptitude. So in our own country in cuttings, when a tramway could not be made, the rubbish was often thrown into baskets, and conveyed from hand to hand, with a considerable amount of speed. Human labour was still adhered to in the Forest of Dean, where the magnificent brown peroxide of iron was carried by lads, by means of what was called a "billet," and which held from one-half to three-fourths of a hundredweight. The reason why the system still existed was that the nature of the workings was so irregular that it was impossible to adopt any system which would entirely dispense with this sort of carriage. A step in advance of this was the transformation of the billet or basket into a sled or sledge, in which the mineral was carried from the actual face of the working down to the nearest roadway by which wagons or wheelbarrows could be brought up. These simple expedients were mostly employed in metalliferous mining, when the work was exploratory, or where the lodes were thin and poor; but when they came to coal and ironstone mining other systems were requisite. In the last century most of the coal was drawn by horse-power to the bottom of the shaft, and this was still in operation in some districts. In South Staffordshire, for instance, where such large quantities of coal are wrought, as in the great Dudley seam, the plan there was to place it in a skip shod with iron, so as to allow it to be drawn easily out of the workings. The mineral was put upon a four-wheeled carriage, and then wheeled to the bottom of the shaft by horse-power. In some places it was the custom to use wicker baskets, the making of which used to be an enormous business in the North of England. It was this which gave the names to the levels of "rolley way," from "rolley," a basket. The next improvement was a very great one. Up to this period the mineral had been brought to the shaft, and lifted up in the skip, just as they had arrived at the bottom; but this was a bad plan, inasmuch as the dead weight of the wheels was thrown on the engine. From 1835 to 1840 a great change came over the spirit of these things, and baskets were entirely superseded by the use of small wagons, on which "tubs" are placed, and the introduction of rails. Wooden rails had been introduced by the German miners at an earlier period, and at the end of the 17th century they were introduced into the lead mines of Alstone Moor. Iron rails, however, did not come into general use until the date he had named. About the same time another plan came largely into use—namely, to lay down tram-plates, and mount the wagons on narrow-edged wheels, so as to reduce the wear and tear. The system was now thoroughly developed; the wagon wheels were made with flanges, the rails were T-shaped, or bridge rails, and the roadways had attained a great degree of perfection. The wagons, or tubs, running upon these rails had a great variety of forms. In the South of England, in metalliferous mines, the wagons were made to hold 1 or 1½ ton, and were constructed of sheet iron. These wagons had an ingenious contrivance for tilting. In the collieries of Lancashire and Derbyshire, where the greatest advances had been made in the economy of working, small wagons, holding from 16 cwts. to 1 ton of mineral, were in use. In these large works it was a grave question how far, and in what manner, horse labour could be superseded by the steam-engine, There was a considerable prejudice in favour of animal power, and in some mines large numbers of Shetland ponies were imported to work in the small levels; but when they reached the main roads good sized horses were used to draw whole trains of tubs. With regard to the proper gradients for these tramways, it had been found that an inclination of 1 in 130 or in 160 offered the greatest amount of advantage. The late Mr. Nicholas Wood carried out a most important set of experiments as to the amount of horse power which should be accomplished, supposing all the circumstances to be favourable, and he found that 100 tons drawn a mile by each horse would be a fair performance in a day. Unfortunately, things are not kept underground in such good order as at the surface, and rendered such a performance as this out of the question; and, indeed, the work done by horses underground fell infinitely short of that which might have been expected at the surface. It was found in some well-managed collieries that not more than from 30 to 40 tons conveyed a mile was effected in a day; while in many cases the performance often did not reach 20 and was sometimes even as low as 10 tons. This had, no doubt, led to the substitute of a stationary engine for horse power, and where there used to be formerly in the large collieries of Seaton Delaval from 80 to 90 horses kept underground, besides a herd of Shetland ponies for "hurrying" through the subsidiary roadways, the work was now effected by steam power. The arrangements there were so good that trains varying from 30 to 100 wagons were drawn a mile and a half in nine or ten minutes.

He could not leave the subject of the removal of minerals underground without saying something of their conveyance along the main levels by water, which used half a century age to be considered by far the best plan, where it could be made available. In the present day it had fallen very much into disuetude, the mines being laid out now with a view to the use of tramways and iron rails rather than of canals. Some instances, however, yet remained, and very curious they were, being a connecting link, as it were, with the times of those great civil engineers Brindley, Smeeton, and others. Thus, in Silesia there were two very remarkable instances, where the levels being made of unusual size were filled with water, and the ore was conveyed from the workings in flat-bottomed boats. The motive power was employed by means of a fast rope pulled at by a man, who stands or crouches in the bow of the boat. In our own country the most remarkable instance of this was to be found on the Duke of Bridgewater's estates in Lancashire, where branches of the great canal system established there ran into the mines for great distances, and were used for the conveyance of the ores and minerals into daylight. Another of these canals existed in the lead mines near the town of Holywell, in Flintshire, and a curious relic of olden times it was. There the level was of but small dimensions, and the space between the boats and the roof was extremely narrow, so as to offer no great inducement to would-be navigators to undertake so gloomy a voyage.

Lecture XLIII.—They had now arrived, said Mr. Smyth, at those portions of mining operations which were of a purely mechanical character—namely, the raising the mineral in the shaft and the pumping of water out of the mine. All these needed a considerable amount of practical mechanical knowledge; and while it would be out of place to bring before the students the principles or practice of the construction of the various machines employed, there were some points with which a mining manager should be acquainted. For instance, he should know the nature of the machine and the class of power it was most advisable to employ in the different classes of mining to which machinery was applicable. He had already dilated upon the manual labour that had to be employed in excavating and other works, and he had also mentioned mule and horse power as coming largely into play in the metalliferous mines of Spain and South America. He now turned to water and steam power, with reference to which he would set before them a few of the sorts of machinery the most serviceable and the most generally used. Water-wheels were of various kinds, and ranged in diameter from 4 to 60 or 70 ft. The cost of construction increased rapidly as the larger sizes were reached, and it was, therefore, often thought advisable to break the column of water, and have two wheels of smaller size rather than one large wheel. There were, however, fine specimens of single wheels in some of the larger mines, as, for instance, at the Laxey Mine, in the Isle of Man, where there was an overshot wheel, 72 feet in diameter, employed in pumping. The question of size was ruled entirely by the nature of the work to be done, and there was no duty of a mining engineer more important than that of seeing the machinery was of a kind and of dimensions suitable to the production of the results aimed at and the particular class of work to be done. Thus, it often fell to the lot of the mining engineer to construct, or to direct the construction of, various kinds of machinery, and this particularly in foreign lands. In this country very little difficulty was experienced, owing to the great facilities that existed for the acquirement of any class of machinery, whether simple or complicated, common, or entirely novel. Excellent foundries were scattered over the length and breadth of the land, and mine managers, therefore, could get whatever they required for use, or estimates for any machinery they might be thinking to adopt. In foreign lands the case was far different. Even in Europe these advantages were only obtainable in comparatively few districts, and in the colonies no reliance whatever could be placed on them. He, therefore, suggested that students should give great attention to the construction of water-wheels, of which there was a large number of models in the museum.

The lecturer then, by means of diagrams and drawings, described in detail the construction of over and under shot water-wheels, explaining the scientific principles which came into play in the application of the water and its escape, so as to obtain the fullest effects from the weight brought upon the wheel, and the least possible drawback at its departure. He also exhibited a model of another class of wheel, called the "turbine," by which a rotary motion of enormous velocity was attained, with much less diameter, and far greater compactness. These wheels were more employed on the Continent than in this country, although there was a very remarkable instance at the Laxey Mines, where the drawing from a depth of 200 fathoms was very effectively performed by a small compact turbine. Another method of employing water power in certain districts, where they had the advantage of a great height of fall, was the hydraulic pressure engine, which was extensively employed in Hungary, and in some other continental districts.

In conclusion, he must not forget to mention, as regarded water-wheels, that they could only be advantageously employed within certain moderate limits of velocity, as it was obvious if they turned too fast there was loss of power. The most economical speed to drive the overshot wheel was when the circumference travelled at the rate of 6 to 9 feet per second. It was not advisable to have the wheels larger than 30 to 40 feet in diameter, otherwise they would not get the full power from them. Hence, if greater power than would be derived from one of that size were requisite, it would be advisable to have two wheels.

Lecture XLIV.—In the earlier stages of mining, it was commonly the case that simple round hempen ropes were employed. It was very important to see that the materials and workmanship of this description of rope were good, and also that it was not too heavily tarred. Where the rope was liable to get damp occasionally, the proportion of tar required was from one-fifth to one-sixth of the weight of the rope. Another kind—the flat hempen rope—came into use some time ago, and still retained its place in deep mines. The introduction of the flat hempen rope was considered a very great advantage at the time, on account of its lapping so regularly on the drum, which increased the leverage at the most convenient time; it was also less liable to fractures than round ropes were, and entirely obviated the twisting and contortion which formed so objectionable a feature in the use of the latter. The fibre of the aloe was a material largely used on the Continent, it being imported extensively from Mexico for this purpose. Many of the large collieries of the North of France and Belgium used rope of this material, as well as many metalliferous mines on the Continent. It had not been used to any great extent in this country, but on the Continent it appeared to have given considerable satisfaction, being employed in many collieries where the engines were sufficiently powerful to raise very large quantities of mineral from great depths. Aloe ropes, as a rule, were considerably heavier than hempen ones, requiring to be made of great thickness at the top, which had to sustain the greatest weight, and gradually thinning towards the bottom. The proportion of tar used in their manufacture was 15 per cent. Chains had up to the present time been more largely employed in metalliferous mines than ropes, on account of the absence of rigidity in the former. They should be made of the very best material, as the strength of a chain only meant the strength of its weakest part. Charcoal iron of the best quality was the material of which they should be constructed, and it should only be purchased from firms in whom full reliance and confidence could be placed. Owing to the great number of accidents resulting from the use of single-link chains, it was generally admitted that no person should be allowed to ascend or descend the mine by them, and in every well managed mine the practice had been entirely abolished.

The best hammered iron would, after a time, if exposed to a series of constant successive shocks, be apt to lose its fibrous character, and become crystalline. Hence there was nothing approximating to perfect security where they were employed. On account of the danger attending the use of single links, chains composed of three links joined together had been introduced, and it was stated that very few cases had occurred in which they had parted suddenly, it being very commonly the case that if unusual strain were put upon them one of the links gave way, and, falling out of its position, at once attracted the attention of the bankman, and the matter would be rectified. The great objection to these chains was their enormous weight, which ranged from 20 lbs. to 25 lbs., and even 28 lbs. per fathom, which in mines of great depth was a matter of serious importance. A very remarkable step in this department of mining was taken when, in the year 1830, wire-ropes were substituted for hempen ones in some of the Hartz mines; and the change was found to be so beneficial that a few years later iron wire-ropes were introduced into this country by Mr. Lewis Gordon, and very soon the advantages of these ropes in their small cost and comparative lightness as compared with hempen ropes caused them to be largely used in metalliferous mines. Owing, however, to the shafts of these kinds of mines not being well provided with contrivances to prevent the rubbing of the rope against the sides and rocks, they had not made so much progress as it was anticipated they would do. Wire-ropes were introduced into Saxony and Hungary almost simultaneously with their introduction into England, and in each of those countries they had been admitted to be a great improvement on the ropes previously in use. Many of the wire-ropes used in the metalliforous mines of this country had failed, in consequence of their being composed of a large number of very thin wires, and the wires being too sharply twisted. Flat wire-ropes had also been made by sewing together several round ropes, and they performed the same sort of service, and possessed the same advantages, when properly guided, as flat hempen ropes. Important as the introduction of wire-ropes had been, that of steel ropes promised to be still more advantageous, although as yet they had not been thoroughly tested. Some who had tried them objected to their use on account of their great thinness, leading to the same difficulty as was met with in the case of wire-ropes—that the individual wires were of so much importance that the fracture of one was generally fatal to the entire rope; but, on the contrary, some who had used them carefully had reported them to be very durable. At any rate, steel required a smaller diameter than iron, and greater care must be taken that it did not pass over too small an angle, so as to snap it, and that it did not came into contact with the rocky sides of the shafts.

Lecture XLV.—He would now pass from the simpler forms of raising minerals to some others. He had pointed out that they had been able to attain to a close approximation to what might be done by means of a windlass placed over the shaft in preliminary and small openings by manual labour; and the next class was that in which greater power was used, and when it was necessary to place it not over the shaft, but at some little distance by its side, and when, therefore, they would have to break the angle by means of pulleys of some sort. In order to carry this out it was necessory to erect a kind of frame, and put up some contrivance to carry the rope, or chain, over to the source of power. In metalliferous mines, what was called a whip and derry was used for this purpose. This was a fixed pulley, generally of cast-iron, 2 or 3 feet in diameter, supported by cross timbers. The horse was merely harnessed on to the end of the rope, and walked away to the end of a given distance, and thus raising a moderate weight from the bottom. The whip and derry, however, could only be used in temporary or opening works of no great depth. For horse-power the general arrangement was a wheel-and-axle-kind of machine, called a horse-gin, or whim, consisting of a rope-drum built round a vertical axis, the foot of which turned on a stone or on an iron casting, and the head part of which was supported by a long span beam, resting at the extremities upon inclined legs. Attached to this was an arm, or arms, which must be of considerable length, generally from 30 to 36 feet, and it embraced the vertical axis close beneath the drum, which was in coal mining from 12 to 16 feet in diameter. The ropes passing off from the opposite sides of the drum were conducted over little guide pulleys, called jacknapes, to the sheaves set in the shaft-frame overhanging the pit. These could also be worked by hand labour if on a smaller scale, and were more effective than the windlass, as had been found by experiment. Horse-whims were, however, now more usually employed than the hand-whim, except in small experimental adventures in Cornwall. In the coal districts, as soon as any considerable depth was attained, steam-power was invariably introduced, but in Hungary, in Spain, and in Mexico, where it was difficult to employ water or steam-power, the construction of the whim became a serious matter, both on account of the great depths for which it was used, and the number of horses required, and a variety of attempts at improvements had been made. One of these, instead of coiling the rope on the open drum, had projections, by which each coil was made to overlap the other, so that they got the advantage of a diminished radius of the drum as the rope was wound off. This kind of whim required a little more expense in respect to the drum, but it was one which by its economy of power was worth keeping in mind by those who had to do with metalliferous mines, where whims were often used to a depth of from 60 to 100 fathoms; these depths, indeed, were moderate compared to those in foreign countries. In Hungary the mines were 200 fathoms deep, and all the mineral had to be raised by horse-power. In Spain experience had shown that horse-power could hold its own against steam, because, besides the expense of getting weighty machinery carried up the mountains, the cost of bringing coal from a distance, and other outlay, outweighed all advantages in other respects. If they went a step further they would find that in Mexico and some of the mines in Spanish America horse or mule power was a long way preferable to steam power; hence some English companies had lost much money by sending out expensive steam-engines to places where they were not applicable, and where it would have been better to have trusted to the horse-whim. Perhaps the most remarkable instance of the employment of this kind of power was at Granada, in South America, where a number of horse-whims were worked at the same shaft, which was of enormous dimensions, and polygonal in form. On each side of the polygon was a whim worked by 12 mules, which alternately drew all mineral, or all water, from a depth of 300 fathoms. In Hungary there was an approximation to this, because the shafts there were often very large. In Saxony, however, the drums were of comparatively small dimensions, but on account of the great depths for which they were used they were fitted with a most elaborate arrangement of brakes for the safety of those employed below. In that country, too, each whim had a peculiar conical roof erected over it, and, indeed, those roofs were a noticeable characteristic of the coal mining districts of Eastern Europe. In this country they were unprotected from the weather, but a paling of gorse was often placed around the path on on which the horse travelled. The principle of the whim was precisely that of the wheel and axle, and, therefore, the power was easily calculated. A horse, with a velocity of 2·9 ft. per second, would exert a constant force of 95 lbs. at the extremity of the axle, so that the unit of work done would be 16,530 lbs. raised 1 ft. high per minute. In our country a good deal depended on the pit-whim being put opposite the wheel, so as to diminish the friction, and this was especially important where it was found convenient to put up a horse-whim at some distance from the shaft. The lecturer then spoke at some length upon the size of pulleys, which during the last 30 years had increased from the old average of about 2 ft. diameter to 6 or 8 ft. in metalliferous mines, and in collieries to as much as 20 ft. These increased sizes had led to enquiries as to whether some other material than cast-iron should be used, and a plan, patented by Messrs. Newall and Co. to lighten the wheels was considered a great improvement. In the model-room upstairs there was a good collection of pully-frames. It was, for the most part, a question of carpenteric, but of late years wrought cast-iron had been largely introduced; and they would find an interesting description of the older forms, some, however, of which remained in use to this day, in the work of that fine old writer on mining—Agricola—who wrote in the year 1630.

Lecture XLVI.—Whatever means were used to raise the mineral, whether horse-whims or water-wheels, or steam-engines, the weight in all cases was placed in a kibble or basket attached to the ropes or chains to be wound up. The baskets or skips of the old miners were left to swing in the shaft, and that method was adhered to even to this day in many districts, both abroad and at home, in small workings; but the friction in such cases was enormous, and the power, whatever it might be, was not able to raise in a given time anything like the quantity as could be raised when they had apparatus to guide the weight. This fact was recognised by the German miners long before it was by our own countrymen, and in Saxony the ascent and descent of their "skips" was regulated by guides. It was not until the year 1829 that guides were introduced at some of the mines in the Somersetshire district, and not until ten years later that they began to make their way into the North of England. After this quite a revolution was brought about, and in a very few years there were hardly any large pits that did not adopt them. The practice of employing guides made it convenient to introduce cages into the shafts in which the wagons or tubs were placed. One great advantage connected with cages was that there was no transhipment of the coal, and consequently a less percentage of small coal, whilst the facility of working when cages were adopted, combined with perfect security, was such that it was only by their instrumentality that it was possible to raise the large quantities of mineral produced at some of the larger collieries. The simplest mode of putting in the guides was that adopted at some of the Lancashire collieries, in which a pair of wire-ropes were stretched from the bottom of the shaft to the pit-head frame, on which the cage travelled; and this, whilst being extremely simple, was very convenient whilst sinking. Another plan was that of using cylindrical iron rods, which gave a much greater stiffness and regularity of action than the ropes which swayed to and fro in the shaft. The rods also frequently came in handily for communicating signals in the shaft, as on being struck with a hammer they gave out a peculiar vibrating sound, which could be heard for a distance of 200 or 300 yards. At the greater number of collieries by far it was found most convenient and economical to fit the shafts with simple wooden guides, which were generally made of Baltic pine, 4 in. by 3 in., or 5 in. by 4 in. in thickness, and were placed in the various positions. A shaft, for instance, might be divided for various purposes, such as for the ventilation—one half to act as the downcast, and the other half as the upcast; and in this case the guides might be fixed on the one side to the brattieing dividing the shaft, and on the other to the side of the shaft itself. In some of the largest collieries in the North bridge rails of rolled iron affixed to the buntings were employed as guides. These rails were extremely firm and durable, and it was worthy of note that they had been adopted at pits doing an amazing amount of work, and where the drawing was accomplished, perhaps, with a greater rapidity and ease than at any pits in the world. Cages were usually made of wrought or malleable iron. They differed according to the magnitude of the work to be done, in being either single or double, and in the latter might either carry two wagons side by side, or they might have two decks or stages in them, and thus be capable of carrying four tubs; it was necessary, however, when they were intended to carry four tubs to make them very strong. Hence cages were often of great weight, a moderate sized one weighing 24 cwts., whilst many weighed as much as 1½ and even 2 tons. That was exclusive of the material to be raised, as well as of the tubs, which often weighed from 3 to 4 cwts., besides the coal, which generally would be 10 or 11 cwts. more. As the lightening of this immense weight was of considerable importance, steel cages had been latterly used in some collieries, which reduced the weight without lessening the strength, this was likely to prove a valuable change, but the experiment had hardly been tried long enough to justify a decided verdict on its merits. Cages of enormous dimensions, with two or three superincumbent stages, were employed in Belgium, and some very interesting specimens were exhibited last autumn at the Paris Exhibition. The largest cages in use in the world were probably those of the Grand Hornu Colliery, near Mons, which consisted of four decks, each of which held two tubs. A very ingenious method of loading this cage at the bottom of the shaft was adopted, which enabled the work to be accomplished in a most expeditious manner; it was as follows:—At the bottom of the shaft a level branched off on each side, and at a short distance from the mouth of each level a small winze was sunk, of just sufficient size to allow of a tub of coal being let down into a small passage, which communicated with the shaft at a lower point than the level above referred to. This was to allow of the loading and unloading of two of the decks of the cage to be carried on simultaneously on each side of the shaft, the first and third deck being filled on one side, and the second and fourth on the other. The tubs were let down from the levels into the lower passages by means of a pulley and rope. As regarded rapidity in raising the mineral, one great point was to see to discipline amongst the men, as attention to this might in some cases double the quantity of mineral raised in a given time. In some cases the output had been increased from 200 or 300 tons a day to 400, 500, or 600 tons in the same time, and with no larger number of men, solely in consequence of attending to this point. It was only by a proper regard being paid to this matter that it was possible at Hornu to raise from 1200 to 1300 tons.

The use of guides rendered practical several methods of obviating the dangers of a fracture of the rope in raising or lowering. The general principle was an arrangement so that the moment an accident happened, which released the strain upon the rope, two arms or levers flew out, the extremities of which fixed themselves into the wooden guides, and held the cage fast. A catch of this kind, used at the large collieries of Anzin, at Fontaine, in the North of France, had been found to be very effective, and had been largely adopted elsewhere. The "grip" of Messrs. White and Grant, of Glasgow, was used a good deal in the North of England and in Scotland. It clutched the two sides of the

guides, and was very effective. Owen's plan was chiefly in vogue in Somersetshire; and as long as the winding went on at ordinary velocities it might be considered effective, but with the extremely rapid winding of the North of England, where 300, 400, or 500 yards per minute was done, the surging of the rope was such as to release it from the tension caused by the weight long enough to release the safety-catches, and to fix the cage in the shaft, and then the rope being lowered upon it a danger of another kind was encountered. In consequence of this, a great number of apparatus of this kind had been dismissed; and although some of them ought to be employed more largely than they were, it was a question whether it was not better to trust to having the best machiney with ropes or chains of the best material, and the exercise of great care and attention on the part of the men engaged in the winding. Indeed, care would be requisite under any circumstances, and whatever the excellence of the contrivance adopted. There ought, therefore, to be a most efficient supervision, and carelessness in the slightest particular or degree ought not to be tolerated, when the lives of so many men were in question.

## Original Correspondence.

### MINING IN CANADA—ANNUAL REVIEW.

By Professor BELL, Queen's University, Kingston.

The year 1867 has been marked by greater progress in the development of the mineral resources of the provinces of the Dominion and Newfoundland than any preceding one. The following is a brief review of the state of mining and allied branches of industry in the order in which the localities occur, beginning at the west:—

ONTARIO.—Silver ore and native silver have been discovered in promising quantities at Thunder Bay, on Lake Superior, and two companies have been formed for the purpose of working the mines. One of these, the Thunder Bay Company, has its head-quarters in Montreal. The other, the Shuniah (Ojibway for silver or money) is an American company. It is said that similar indications are found on one of the locations of the old Montreal Mining Company.

In 1866, iron mining was carried on at Gros Cap in Michipicoten Bay, but it has not been continued this year. At Batchawana Bay, the Peter Bell Company, after teaming a considerable quantity of ore along the track which had been graded for a railway, to their wharf in the bay, abandoned their works entirely, removing everything except the railway iron, which is piled up near the shore, and have commenced operations on a bed of hematite occurring near Arnprior, on the Ottawa. The mountains of iron ore which lie a few miles behind the Peter Bell location at Batchawana Bay are as yet unworked. New discoveries of valuable minerals in this neighbourhood are reported.

At Begley's copper mine, an adit level has been run almost to intersect the main lode, which is large and apparently rich. The work has been suspended for the winter. The continued depression in the copper market has had a very unfavourable influence on the working and prospects of the mines yielding such metal. The cause of the slackness of demand for it is partly attributable to the general duiness of trade in England, and partly to the fact that wooden vessels are being to a great extent superseded by iron ones, and consequently less copper is being used for sheathing purposes than formerly. Simultaneously with this absence of demand, come abundant shipments of the metal in the shape of bars and regulus from South America. From Sept. 1 to Oct. 2 last year, the charters from Chili and Bolivia were for 4549 tons fine copper, and during the corresponding period of 1866 they were for 2933 tons only. Many of the largest mines, such as the Cape Copper and Panulcillo (in Chili), have been working to an enormous loss, and it is argued that they must reduce their production, in which case a better state of things may be expected this year.

On this account the Wellington and Bruce Mines, on Lake Huron, have been worked to a smaller extent than formerly, and with a view of preparing the way for a more extensive production in future, rather than for immediate returns. A large number of miners have been reluctantly discharged and only between 50 and 100 are kept at work—part of them at the old Bruce. The price of copper is now less than half what it was a few years ago.

Nothing is going on at present at the Wallace copper and nickel mine, nor at the iron mine immediately adjoining. There are rumours (some of them of a credible nature) of the discovery of gold in quartz on the Canadian side of Lake Superior, and in dolomite immediately behind the Bruce mines.

The attempts to find petroleum in paying quantities at Wequemakong, on the Grand Manitoulin Island, have been given up, the prospects of success not being sufficient to warrant further outlay so long as the crude oil has little more than a nominal value.

The experiment of making salt from brine at Goderich has proved a success. One of the works produces about 600 barrels a week of excellent salt, and new wells are being sunk.

In Enniskillen the production of oil is as large as ever, notwithstanding the fact that all the small wells are closed. Petrolia is furnishing the largest quantity. Comparative duiness reigns at Oil Springs. So far, there is no prospect of an exhaustion of the oil in this region. It is believed by some that one of Mr. Macaulay's wells at Petrolia flowed as much per day as even the Shaw and Wilson wells, so famous in the early history of oil springs.

Bothwell has almost ceased to send any petroleum to market, although many of the wells would still produce a fair amount, if the price were such as to make the oil worth the pumping.

The constant increase in the price of wood in Ontario has caused attention to be directed to the peat bogs at the mouth of Grand River, and of the Cataraqui, at Kingston, as sources for the future supply of fuel.

A vein containing lead ore occurring in Galway near Peterboro', and another in Methune to the north of Belleville, have been worked for a short time. The Tudor Lead Mining Company of Boston have carried on their works in North Hastings, and the mine is improving in going down. Messrs. Hill and Kershaw, of Milwaukee, are also prosecuting lead and bismuth mining in Tudor with commendable enterprise.

The rich magnetic iron ore at Marmora Lake is being worked with great vigour by the Cobourg, Peterboro' and Marmora Railway and Mining Company. The gentlemen composing it belong principally to Pittsburg, Pennsylvania. They have between 400 and 500 men at work. About half of them are French Canadians from Quebec. The ore is sent off during the summer at the rate of about 400 tons a day, by way of Rice Lake and the railway thence to Cobourg. The mine, or rather quarry, is very conveniently situated. A village called Blairtown has sprung up at the spot.

The discovery of gold which was made in Madoc a year and a-half ago has stimulated an extended search for the precious metal throughout the county of Hastings. It is said that in Madoc and the surrounding townships the farmers are digging 600 holes. A stamp mill at the original Richardson Mine is being erected, and two others have been built in the same neighbourhood. Joint-stock companies have been set on foot at Belleville, Madoc, Toronto, and Hamilton, with a view to mining for gold in this part of the country. Gold has also been found in quartz in Levant.

The attempts to find oil by sinking wells at different points north of the Bay of Quinte and at Waterloo, near Kingston, have all been given up as fruitless.

Probably the most important discovery in the way of new mines which has been made in Ontario during the year is the very recent one of an extensive vein of galena in the township of Loughborough, in Frontenac. The vein is described as being 12 ft. wide and of great length, in the same course as those at Rossie, on the opposite side of the St. Lawrence. An association called the Frontenac Mining Company has been formed to work it, and Cornishman have been procured from the Bruce, Wellington, Capel, and Huntingdon mines. One of the shafts is down 30 feet. The vein is 15 feet wide at the bottom, and expanding regularly. An adit has been driven from the side of a hill along the vein a distance of 120 feet. The ore is thickly disseminated through the whole mass in both the shaft and drift.

The Messrs. Chaffey Brothers continue to mine iron ore at Newboro' on the Rideau, and export it to Pittsburgh, Pennsylvania. An American Company has been working an iron mine near the same place. The operations of the Peter Bell Company, near Arnprior, have been already alluded to. Their prospects are said to be very good.

The Arnpryor marble, which was used in the construction of the interior of the Parliament buildings at Ottawa, was very much admired during the late session, and it is probable that it will come largely into demand in future.

The preparation of hydraulic cement has been commenced by Mr. Rudd at his quarries in Pittsburgh, on the banks of the St. Lawrence.

Phosphate of lime, which is so valuable for agricural purposes, is beginning to attract attention—not of our farmers, however, but of Englishmen and Americans. Fifty thousand dollars are said to have been paid for a lot near Perth, and the mineral phosphate or apatite has been mined in considerable quantities by Mr. Aspden, and sent to Manchester, where it is converted into the superphosphate. About 30 men have been employed. It is proposed to mine the phosphate on a neighbouring lot, and send it in large quantities to the United States. It is converted into superphosphate, principally by the aid of sulphuric acid, which, again, is made from iron pyrites—a mineral occurring in large quantities not far from the apatite, and might be very advantageously used in making this very valuable manure in our own country. One of the deposits of pyrites in Elizabethtown has been worked, but the mineral has so far been sent out of the country. A large deposit of the bronze or magnetic variety has been discovered near Lynn, and about 100 tons have been quarried.

QUEBEC.—The rich deposit of magnetic iron in Hull, opposite Ottawa, continues to be worked with every prospect of success. The smelting is done by charcoal and wood. An excellent quality of iron is produced.

Plumbago, or graphite, has been worked by the Canada Plumbago Company of Montreal, in Buckingham. An average of 50 men have been employed during the summer, and 20 in winter. A stamp mill has been in operation, producing 1 ton a day, worth about $120. The price has lately risen to nearly $200 a ton. In the adjoining township, the Lochaber Plumbago Company (an American one) have a mill in operation, and employed about 40 men during the summer.

The discovery of galena in Buckingham has, so far, not resulted in any profitable mining.

Gold has been found near L'Industrie (in the Montreal district) in felsite, in the proportion of about $6 to the ton of rock.

The Canada Peat Company, using Hodge's process, have prosecuted their operations at La Pigeoniere. A good quality of peat has been manufactured, and used successfully on the Grand Trunk Railway.

The works at Bulstrode, on the Arthabaska Railway, have been given up for the present.

Nothing whatever is being done at the Acton Copper Mine.

At the Melbourne Slate Quarry a new level has been opened. The produce of the quarry has been 30 squares per day during the greater part of the year, but latterly much more. The quality continues to be all that could be desired. The Rockland Quarry, west of the Melbourne, has been further developed. It gives employment to between 26 and 30 men. The Prince Albert Quarry, still further west, is undergoing development, and employs about a dozen men. Two other quarries are also being opened in the neighbourhood of Melbourne. In Granby a quarry of red slate is being opened, under the management of Mr. Thomas Frizell. An engine and cutting-machine are to be employed. It is proposed to prepare slates principally for tiles and marbleising.

At the St. Francis Copper Mine, near Richmond, nothing has been done. The copper mines near Lennoxville have been carried on notwithstanding the very low price of copper. At the Capel Mine, managed by Captain Francis Bennett, 100 men on an average have been constantly employed. About 500 tons of ore per month have been prepared for the smelting-works. The main shaft is now about 220 ft. deep, and the main adit has been driven over 500 ft. into the mountain. The smelting is a distinct department, employing 14 men, and managed by Messrs. Stanley and Son. They have been working during the greater part of the year, and in all sent to the English market about 200 tons regulus of 40 per cent. as a first shipment.

The Belvidere Mine, near the Capel, has been actively worked to within two weeks of the close of the year. Smelting works have been erected during the year under the superintendence of Mr. Thos. Macfarlane.

The Lower Canada Mine, adjoining the Belvidere, has given employment to about 25 men under Capt. Wisewell. The ore at these mines consists of copper pyrites in mundic, and requires the same treatment at all of them. The production was 210 tons regulus of 28 per cent. At the Hasket Hill Mine, three or four miles from Lennoxville, work continues to be done. The Albert Mine sent to market 120 tons of 10 per cent. ore and produced 40 tons of regulus. From 15 to 20 men have been engaged, The Huntingdon Mine, in Bolton, has employed about 30 men. Large crushing works have been erected, and about 2000 tons of 10 per cent. ore have been prepared for market. A new vein was discovered last spring lying parallel to, and about 60 ft. east of, the vein upon which the shafts have been sunk. This new vein is reported to be from 8 to 10 ft. wide, 4 ft. of which on the foot wall consists of solid copper ore. The ore in both veins continues abundant at the depth sunk (160 ft.), and the length of ore ground exposed at surface is 970 ft.

Owing to the burning of all the buildings, except the engine-house, at the Harvey Hill Mine, work has been suspended for the winter. The smelting-works had been in operation a short time before the fire took place. A valuable discovery of copper is said to have been made in Inverness, and the mine is about being opened.

Some of these mines in the Eastern Townships are rapidly passing the mere exploratory stage, and now require to be opened in greater depth and with more perseverance than has hitherto been displayed. None of the shafts belonging to them are yet worked by anything better than a horse-whim. Their depth and the amount of water collecting in them render hoisting machinery and pumps worked by steam indispensable to their profitable development.

In addition to the gold which has been known for some time to exist near Lennoxville, silver ore has been discovered about eight miles S.W. of the village.

On the Chaudiere, gold mining has been prosecuted by the De Lery Company. The property has been examined by Prof. Hind, and a crushing-mill erected. It is proposed to subdivide the location among smaller companies.

The low price of petroleum has prevented operations from being carried on in the oil region of Gaspe. From all accounts the prospects of obtaining flowing wells in this district are excellent, and all that is required to stimulate the search for them is a better price for the oil.

Attention has been directed to the deposits of iron-sand on the north shore of the Lower St. Lawrence and the Labrador coast. Locations have been taken up at the mouth of the Moisie and to the west of it, at the mouth of the Natashquan, at Black Bay, and other places. The sand occurs along a considerable stretch of the coast in the Mingan Seignory. It is reported that some hundreds of tons from various points have been sent for smelting *via* Lake Champlain to Troy and Albany. The Moisie Iron Company have erected smelting-works and numerous buildings for workmen's houses and other purposes, forming a considerable village. The buildings are mostly whitewashed, and this once uninhabited coast has now a business-like appearance.

### ON THE WASTE OF MINERAL AND OTHER NATURAL PRODUCTS.

SIR,—The waters which encompass the British territories of Nova Scotia, Magdalene Islands, and Newfoundland, as I ventured to point out in my last, abound in fish—species various, quantity illimitable. Labour is remarkably cheap, and other accessories for utilising the vast shoals all that could be wished. At present, in the absence of a fitting outlet, enormous quantities of the captured fish, as well as offal, are thrown back into the ocean. Now, why this prodigal, this unnatural waste? Principally, I believe, owing to the importance of utilising this bounteous gift of Providence not having attracted the attention of the capitalist, and to the absence of reliable information upon the subject. Much has been written upon the value of the Newfoundland cod and other edible fish, the amount of yield, quality of the article when taken and cured, employment it provides to the native population, and the excellent means afforded for rearing a reliable source of hardy seamen should emergency arise for their service in the Royal Navy. Of all these matters *ad nauseam*. But of the main features, as I take them to be, the profitable occupation of the poorer class of residents during inclement seasons, the reckless waste of the elements of wealth, and safe and lucrative outlet for the redundancy of the wealth of the Mother Country, not a single word in any treatise upon these islands. This is the more strange as our manure manufacturers have for years been straining their utmost energies to discover more certain and less costly sources of the basic manures. In fish and its offal the manufacturer is furnished with the elements for the successful prosecution of his vocation, and he, of all classes of the community, would hail with unbounded satisfaction the arrival of a fleet laden with compressed fish. In the ordinary engagements of commerce it most frequently happens that an estimate of supply and demand becomes a fallacy of extraordinary dimensions, often one whose sequel is ruinous in its consequence. In the case of the article in question, the two are prepared to keep pace with each other; however great the demand, the material can be supplied; upon however grand a scale the preparation of the material, purchasers are to be found in an equal ratio. How strange, and yet harmonious, the economy of nature and art! Modern fastidiousness, in its extensive ramifications of *cloacæ*, consigns the most unexceptionable pabulum of vegetation to the profundity of the bed of the ocean, the sea returns it to the land in the form of marine animal substance. Why, then, should not man display as great tact and skill in utilising the whole of this restored gift as he does in throwing it away?

The process of treating fish involves no extraordinary ingenuity, no complicated machinery, no serious expenditure of capital, and hence no formidable risk. The undertaking offers one of the safest and most lucrative means of investment. In its normal condition fish, from its enormous bulk, the preponderance of *effete* over useful matter in its normal condition, and the obnoxious emanations evolved offers insuperable obstacles to its conveyance to these shores, and the same objections would apply to its general employment as a manure. I shall, therefore, now enter upon a few practical observations on the mode of concentrating the valuable portions, and rendering them portable and inodorous, and capable at once of transit. Prior to doing so I would enter into a few statistical details relative to the probability of profits. These are not based upon hypothetical calculations, but upon the broad and safe assurance of those best able of estimating the practical value of the commodity—merchants on the spot, who are not only thoroughly acquainted with the capabilities of the islands referred to, and who speak confidently of the ultimate and even immediate success of a well-devised scheme of operation, but are willing, and even anxious, by the investment of capital, to assist in furthering such a project. Of these one merchant, residing at Halifax, Nova Scotia, writes—"An English manure dealer and broker can judge better than ourselves whether a market can be found for some 5000 to 10,000 tons per annum. We are satisfied there will be no lack of the material in the form of fish and fish offal." One of the most considerable merchants of Halifax, and a member of the Canadian Parliament, endorses this statement by writing—"Having the control of the Magdalene Islands Fisheries, I am able to supply from that source at the rate of some thousands of tons annually, at 22*s.* per ton, in a partially salted condition."

Here, then, we have a most satisfactory solution of the question of supply. It remains only to turn to that of demand. For this it will suffice to quote one or two letters received from some of the most extensive consumers. These are the largest manufactures of artificial manure extant. "I could," writes one, "probably give about 5*l.* per ton for compressed fish, in bulk yielding 10 per cent. of ammonia, provided the substance would store without decomposition, and that there were no serious mechanical difficulties in reducing it to a tolerably fine powder. I could purchase some thousands of tons annually." Another firm writes, "I beg to say that compressed fish, containing 10 per cent. of ammonia, would be worth from 5*l.* to 6*l.* per ton. The market for such an article is practically unlimited." With respect to the objection of decomposition, I possess a most conclusive evidence of negation, and should at all times be glad to exhibit it to anyone sufficiently interested in this enquiry, and who will favour me with a call. It is a specimen of the compressed fish matter, manufactured under my own supervision upwards of four years ago, and which, after so long a period, does not betray the slighest tendency to organic change. This at once affords proof of the perfection of the method for preserving the condition required.

As it emanates from the machinery employed the fish manure presents the appearance of graves, and emits no disagreeable odour. These qualities are retained for an indefinite period, owing to the almost entire absence of moisture. In addition to ammonia, in the proportion quoted by these manufacturers, it furnishes a notable quantity of phosphates, and thus may be attached to it, with the strictest justice, the name of a *highly nitrogenised phosphate;* in this respect it competes successfully with the very excellent fertiliser obtained by the desiccation of blood, and which in the English market realises not less, I am credibly informed, than 12*l.* per ton.

Having disposed of the questions of supply and demand, I hope in a satisfactory manner, I turn to the method best adapted to carry out the system of utilisation. In the first place, to parody the oft-quoted advice of Mrs. Glass (the passage, by-the-bye, though I have carefully perused that lady's excellent treatise on the culinary art, I was never able to discover), I propose "to catch" the fish, and then compress it by means of an hydraulic machine. By this simple means the water inherent in the bulk is almost entirely got rid of, the residuum being a comparatively dry mass in appearance, resembling, as before described, graves or oil-cake. This mass is exceedingly friable, and loses to a great extent the characteristic smell of fish. It retains the elements of ammonia, together with a considerable percentage of phosphates, the latter the constituents of the bone. In this form it may at once be successfully employed as manure, or will form a very excellent base for admixture with other manurial agents, according to the nature of the crop for which its employment is demanded.

When George Stephenson, the celebrated pioneer of steam-locomotives, was about to give evidence before the House of Commons touching the speed of his engines, he confidentially assured a friend that he could accomplish a distance of 20 miles per hour. The speed appeared so incredible that his hearer advised him to limit his anticipations to 12 miles, as if he quoted the full capabilities of his engines the Committee would certainly throw out the bill as containing a statement at once incredible and utopian. I give this anecdote as applicable to my own case, were I to quote what I am fully assured is the truth relative to a further means of profit in the process of compressing fish. Using, then, the caution so wisely proffered on that memorable occasion, I will simply assert that, at the *minimum*, from 6 to 8 gallons of fish oil, worth on an average 3*s.* 4*d.* per gallon, is also obtained by compression from cod fish, whilst a much larger quantity is the result of a similar treatment of herrings.

2, *Crown-court, Threadneedle-street.* W. T. RICKARD, F.C.S.

### THE PROGRESS OF MINING—AS A SCIENCE, AND SOURCE OF COMMERCIAL WEALTH.

SIR,—I think from the advance making in the mines of Cardiganshire it would not be uncalled for to devote a little time to notice the progress of the works for the last quarter of a century. During that time the whole system has changed, and the mines, from being a losing property, have become, as a whole, the most profitable undertaking in the kingdom. The county of Cardigan forms the coast to the eastward of a very deep indenture in the land, called Cardigan Bay. This bay is opposite the great Wicklow granite mountains, on the coast of Ireland, from which the coasts are distant about 60 miles from Wales to Ireland. The county of Cardigan is the first county in South Wales in travelling southward from the north; it is principally bounded on the west by Radnorshire. From the sea coast the country rises gradually to the eastward, culminating in the Plynlimmon Mountain, 2462 ft. above the level of the sea. This mountain forms part of the Snowdonian range, of which the principal summits are Snowdon, Cadendris, Plynlimmon, and the peaks of Brecon, the whole of them being more or less in a north and south line, and forming, so to speak, the backbone of Wales. From this great ridge, and westward, branches, in America called cordilleras, run down to the sea, forming very formidable headlands, whose feet are washed by the Atlantic waves, thus dividing the country into valleys; running in an east and west direction through those valleys, the Rivers Rheidol, Ystwyth, Lerry, and others, find their way to the sea, and along their banks run these lodes, filled with lead and silver-lead ores, that have filled the coffers of so many generations of miners. The rock of which the country is composed is the primitive clay-slate, one of the oldest members of the geological family. It is said by the greatest modern geologists to be five miles thick, and all researches proves that it holds hoards of inestimable treasures; indeed, it is traversed by from 20 to 30 well-known lodes, and if we take the bearing rock as 10 miles across, at a very moderate calculation per fathom each lode would contain metallic ores of five times the value of our National Debt, and afford a source of industry to hundreds of thousands of working miners. No doubt the highly wise will laugh all such calculations as these to scorn; in truth, they have done so with the facts of California and Australia. Such glimpses are not put forward as pabulum for the risible faculties of the hypercritical, but as affording an imperfect view of the provision the great architect of the universe has provided for His creatures during the habitable existence of the earth, of which possibly we are now only on the very portals. But whatever riches these lodes may contain, it will not be amiss to notice the course of their explorations for the last 30 years, and to draw from it what practical conclusions we are able in favour of British mining.

About 30 years ago the mines of Cardiganshire were in a very weak state; they had been known to be productive, from the evidence of history, for fully 2000 years; but, like every subluary undertaking, they have been subject to the ebbs and flows of fortune. In the times of Queen Elizabeth and King Charles these mines were rich, enjoying the patronage of the rich and gifted; their praises were sung by poets, they were blessed by bishops; and architects, such as Sir Christopher Wren, devoted their abilities to their welfare; but at the time to which we allude (about the year 1835) their fortunes had fallen to the lowest state. One of the greatest and best mines of the district (Cwmystwith) had been worked by Sir Thomas Alderson, who to the working of the mine combined the additional business of smelting its ore, establishing a large work at the Devil's Bridge. This old smelting-work may still be seen there, overhanging the precipitous dingle of the Rheidol; in fact, looking down on the river below, over nearly 500 feet of craggy rock, affording an excellent place for disposing of the slag. The furnaces of this work were driven by a 30-ft. water-wheel, 3 ft. wide on the breast, and worked by a plentiful supply of water from the neighbouring brooks; but what with having to carry the ore up hill seven miles from the mine, and the coal from Swansea to Aberystwith, and afterwards 12 miles up hill by land, the whole thing—mines and smelting-work—became a wreck, destroying for the time a very rich mine, and crushing the fortune of a great and worthy family. The mine was sold for a trifle to a millionaire, just deceased (Mr. Lewis Pugh), or rather to his father, who soon retrieved the losses of Sir Thomas, and for a quarter of a century enjoyed from this mine wealth and uninterrupted good fortune. Such is the fate of miners, and I suppose will be so to the end of the chapter. Beginning with the mine under Mr. Lewis Pugh's management, affairs soon began to look brighter. A good lode of ore, called the Comet vein, was struck in the western part of the mine, and opened by a series of adits, called Gill's levels, from a very worthy agent from Yorkshire of the name of Gill; these laid open a lode of lead ore 6 to 7 ft. wide, and I have seen it yielding 15 tons per fathom, or 200*l.* worth of ore, that could be taken away for from 50*s.* to 60*s.*, and as the ore was nearly solid it required but little dressing. The mine thus began to give about 10,000*l.* a year profit, and continued to do so for about eleven years. But I must call attention to the state the mines generally were in at the commencement of this time, with the state of the machinery and underground work, which I will do in my next. M. F.

[For continuation of Original Correspondence, see this day's Journal.]

PAPERS ON PRACTICAL MINING.—The thoroughly practical character of the papers read at the recent meeting of the Miners' Association of Cornwall and Devonshire will render the detailed report of the meeting particularly acceptable to all engaged in mining operations.

The volume contains papers "On Bergstrom's Boring-Machine," now in use at the Perseberg Mines, Sweden, and "On the Rock Boring-Machine used at the Altenberg Zinc Mines," by Dr. C. Le Neve Foster; "Remarks on Boring-Machines," by Charles Fox; "On Tunnelling by Machinery," by Gen. Haupt; "On High-Pressure Steam-Boilers," and "On Jordan and Darlington's Hydraulic Mining Machinery," by T. B. Jordan; "On Beaumont and Locock's Tunnelling Machine," by Capt. H. Lock, R.E.; "On the Persceberg Iron Mines," by Dr. C. Le Neve Foster; "On an Excursion to the Chiverton District," by Francis Oats; on the same subject, by William Argall; "On Vestiges of Ancient Tin Workings in the Looe Pool Valley," by R. J. Cunnack; "On the Occurrence of Wood Tin at the Great Wheal Vor," by G. M. Henty; "On the Calamine Deposits of Sardinia," by F. G. Davis; "On Hydraulic Apparatus as Motors," and "On Transmitting Motion in Mining Operations," by John Darlington; "On the Boring-Machines exhibited, or described, at Falmouth (a tabulated account thereof)," by Dr. C. Le Neve Foster; "On Brunton's Rock Tunnelling-Machine,

by J. D. Brunton; and on the Use of Doering's Boring-Machine at Tincroft Mine," by Dr. C. Le Neve Foster.

The price of the book is 1s., and it will be forwarded from the *Mining Journal* office on receipt of 13 stamps.

# Meetings of Public Companies.

## SWAN BANKS COAL AND BRICK COMPANY.

The third half-yearly meeting of shareholders was held at the Union Cross Inn, Halifax, on Monday,

Mr. GEORGE WATKINSON in the chair.

The report of the directors was an encouraging one, showing the company to be very prosperous. The balance to the credit of profit and loss account was 2117*l.* 5s.5d. The directors recommended a dividend of 12½ per cent. per annum on the last six months' working, which was adopted by the meeting, and the balance, 902*l.* 5s. 5d., carried to next account.

Messrs. J. Parkinson, Thomas Hargreaves, and Richard Horsfall were elected as directors, and Mr. John Clay auditor.

## MOSQUITO LAND SECURITIES.

A meeting of gentlemen interested in Mosquito Land Securities was held on Thursday, at the offices of the Central American Association, 4, Westminster-chambers, S.W., to receive the report of the committee appointed at a similar meeting held at the London Tavern, on Oct. 10, 1867. Mr. WILLIAM PAGDEN was called to the chair.

The CHAIRMAN requested the honorary secretary, Mr. Charles Fox Smith, to read the notice convening the meeting, and which he stated had been adjourned from the 4th inst., so as to give a full seven days' notice, the period required by the terms of the second resolution passed at the meeting on Oct. 10, last, viz.—"That the result of the negociations shall be reported by the committee to an adjourned meeting, of which seven days' notice shall be given by public announcement."—Mr. CHARLES FOX SMITH read the notice, as follows:—

"MOSQUITO LAND SECURITIES.—The meeting proposed to be held at No. 4, Westminster-chambers, S.W., on Wednesday, the 4th instant, is adjourned till Thursday, the 12th instant, at Two o'clock P.M.—C. F. SMITH, Hon. Sec. March 4, 1868."

The CHAIRMAN said—After the meeting held in October last at the London Tavern, at which your then Chairman, my friend Mr. Wing, and Captain Bedford Pim so ably laid before you the proceedings of the committee of Mosquito Land Security holders up to that period, and after the meeting on the 4th inst. (of which the present meeting is an adjournment), at which I endeavoured shortly to explain to you the proceedings of your committee up to the present time, it is not my intention to revert to such proceedings, except to mention that in accordance with resolution No. 1, a committee was appointed by the meeting, consisting of Mr. Field, Mr. Wing, Mr. Drakeford, Dr. Kelly, and myself, for the purpose of carrying out the resolutions passed at that meeting; and that in pursuance of such resolution your committee met, in conference with Captain Pim, as to the best mode of dealing with the Nicaraguan envoy, and Captain Pim gave us the benefit of his opinion and advice, which was subsequently embodied in a letter written to Gen. Martinez, dated Oct. 16, 1867, and which, if you please, I will read to you:—

"*Committee of Mosquito Land Securities, 9, Warnford-court, City, E.C., Oct.* 16, 1867.—MOST EXCELLENT SIR: Your Excellency was made aware, by a communication addressed to you on the 12th instant, of the public meeting of gentlemen interested in Mosquito, held at the London Tavern, on the 10th instant, and of the committee which was then nominated "for the purpose of conferring with Captain Bedford Pim, the duly empowered representative of the Mosquito people, on the adjustment of the claims arising out of various grants of land in the Mosquito Territory, and for making such arrangements with General Martinez, the Minister Plenipotentiary of Nicaragua, in respect to said claims as shall appear necessary."

I have now the honour to inform you that the committee has conferred with Captain Bedford Pim, who has gone carefully into the whole matter, and expressed the following opinion:—

'1.—That the Mosquitians, before entertaining the question of absolute incorporation with Nicaragua, desire to see the holders of land warrants granted under former Mosquitian authorities secured in the possession of their land.

2.—That an agreement on the part of Nicaragua to place in quiet possession those holders who can establish their claim to the satisfaction of the Central American Association would remove one great difficulty in the way of the proposed incorporation of Mosquito with Nicaragua.

3.—That, in consideration and acknowledgment of this grant, an annual quit rent of 1 cent. per every cleared acre should be paid by the holders, who should forthwith form themselves into an association, with the view to colonise the said lands.

4.—That immediate steps should be taken to ascertain the views on this subject of His Excellency General Martinez, with the intent of acting in concert with him in laying the matter before Her Majesty's Government, and bringing about at once a practical and satisfactory solution of the Mosquito question.'

With the above opinion of Captain Bedford Pim the committee entirely agree, and, in accordance therewith, they have now formally to state that whereas the claimants are possessed of grants amounting to several millions of acres of land, and whereas an arrangement is desired whereby the Mosquito Reservation shall become incorporated with the Republic of Nicaragua, it becomes necessary that due provision be made for the protection of the rights of the said claimants before such incorporation can be brought about. It is proposed, accordingly, that the Government of Nicaragua shall set apart and assign in full satisfaction of every claim upon the Mosquito Reservation four millions of acres of Government lands—one-third located on the Blewfields River or its tributaries, one-third located on the Great River or its tributaries, and one-third located on the Wanks River or its tributaries. These lands to be freehold, but subject to an annual quit rent of 1 cent. per acre of cleared land, possession to be given in conformity with the Colonisation Laws of Nicaragua. It is understood that, so soon as the grants of these lands shall have been, with all due formalities, made out and delivered, through the intervention of the Central American Association or otherwise, to the respective claimants, the said claimants will proceed to the formation of an association for the colonisation and exploitation of such lands. The Government of Nicaragua shall aid and encourage by every means in its power the exertions of the company for the early and effectual settlement of the country and the development of its resources. This transaction being at once honourable and beneficial to both parties, as well as calculated to facilitate the satisfactory settlement of the national obligations of Nicaragua, the committee feel confident it will receive the favourable consideration of your Excellency, and will be adopted by you on behalf of the enlightened Government of Nicaragua.—CHARLES FOX SMITH, Hon Sec."

To this letter General Martinez replied on the 18th, as follows:—

"*Nicaragua Legation, London, Oct.* 18, 1867.—His Excellency Capt. General Don Thomas Martinez, Envoy Extraordinary and Minister Plenipotentiary of the Republic of Nicaragua to Her Britannic Majesty's Government, has received your favour, which, under date of Oct. 16, was addressed to him by you in the name of the committee which has been formed for the arrangement of certain claims arising from various concessions of lands made in the Mosquito Territory. His Excellency, having been informed of the contents of the above-mentioned letter from you, hopes that the committee will appoint a person to represent them, either Captain Bedford Pim or some other who may merit their confidence, so that that person may come to a satisfactory arrangement with the secretary of this Legation, which arrangement will be submitted to the Supreme Government of Nicaragua. In this manner I am ordered to reply to you, in doing which I have the honour to subscribe myself—E. BERNARD, Secretary to the Nicaragua Legation."

In compliance with the terms of such letter of General Martinez, your committee deputed Mr. Field, one of the members of your committee, to wait on General Martinez, in conjunction with Captain Bedford Pim, to arrange the details of a proposed agreement with General Martinez, on behalf of the Nicaraguan Government, and I cannot do better than call on Mr. Field to state to the meeting the particulars of his interview with General Martinez and his secretary, Mr. Bernard.

Mr. FIELD said that, Captain Pim having prepared the way, by leaving with General Martinez the heads of a proposed agreement for his consideration, he accompanied Captain Pim to the house of the General, and in the course of a lengthened interview the matter underwent a full discussion. The objections started by the General having been, as they supposed, successfully met, and an understanding arrived at on all the principal points, the conference was adjourned to the following morning, when it was proposed that an agreement (to be prepared in due form by Mr. Bernard, the General's secretary) should be ready for signature. The next morning, however, all was changed. Not only were the four millions of acres reduced to two millions, but the grant was to be accompanied with a condition that unless the two millions of acres were put into cultivation within five years the grant should be null and void. It was pointed out that such a condition was incapable of fulfilment, and that it was simply impossible to accept it. Mr. Bernard would not, however, listen to any material modification of this requirement, and the negociation necessarily came to an abrupt conclusion, both Captain Pim and myself being convinced that there was no real desire on the part of the Nicaraguan Secretary to come to any agreement with them. General Martinez left for Paris a few days afterwards.

The CHAIRMAN: I will now, if you please, request Capt. Bedford Pim to state to the meeting the insuperable objection which existed to the terms of the proposed agreement, as altered by General Martinez' secretary, and his (Capt. Pim's) views of the negociation throughout.

Capt. BEDFORD PIM, R.N.: Since the last meeting at the London Tavern, Mr. Field and myself have given our best attention to the interests of the holders of Mosquito Securities. The hope I expressed at that meeting, that Gen. Martinez would see not only the justice but the expediency of allowing your claims, has not been fulfilled. I fear the General was ill-advised on this matter. I certainly assumed that he was in earnest in desiring the colonisation of his country—it was so evidently to his interest—but when Don Emile Bernard laid before Mr. Field and myself his amendments (which I must do General Martinez the justice to say I have every reason to think never received his sanction), we found it impossible to proceed with the negociations. General Martinez soon after left Paris, *en route* to New York and Nicaragua. The following is my last note to him:—

"4, *Westminster Chambers, Victoria-street, S.W., Oct.* 24, 1867.—MY DEAR GEN. MARTINEZ,—I am sorry you cannot come to my house to-morrow evening. I am especially sorry that Don Frederico Solorzano cannot come, because I should have liked to have shown him some of the attention and hospitality which it has afforded me so much pleasure to extend to yourself and Don Emile Bernard. Regretting for your own sake and that of your country that it was impossible for Mr. Field to accede to the proposals of Don Emile Bernard—that 2,000,000 acres of land (if ceded to the Mosquito landholders) must be *cultivated* in five years to make the grant valid, a physical impossibility, even if the entire population of Nicaragua were engaged in trying to effect so herculean a task.—I remain, with every good wish for your happy return to your country and family, your friend, BEDFORD PIM."

General Martinez has returned to Nicaragua unsuccessful in his object. The Secretary of Legation, Mr. Emile Bernard, told Mr. Field and myself that the mission had been much more successful than was anticipated; indeed, Lord Stanley had granted more than they had even hoped for, but it required very little trouble to find out that this idea only existed in the secretary's imagination. It would take a great deal to persuade anyone who had followed Lord Stanley's career that he would consent to an act of injustice, such as allowing Nicaragua to annex Mosquito without the consent of the latter, and so it proved on enquiry. Of course, as the representative of the people of Mosquito, I have taken care to inform them of what has been going on; and just to show you that Nicaragua has no hope of a peaceful solution of the Mosquito question, unless she is prepared to act equitably, I will quote a few lines from letters just received, dated Blewfields, Dec. 27, 1867:—"You may positively depend that the attitude you advise in this matter will be strictly observed, and that a deaf ear will be turned to all and every effort, however plausible, to overturn the present views on this point." Again, "On this subject the secretary of the Moravian Mission also wrote to Lord Stanley, and received a very promising reply, and his lordship did at once write to Mr. Corbet, the Minister Plenipotentiary." I have taken other steps also by which, should any overt act be attempted by Nicaragua, her plans will be frustrated, but I trust this matter may yet be settled in a manner satisfactory to all parties. I have only to add that the failure to settle the Mosquito question with General Martinez, when it was in a nutshell, has caused me much disappointment, for I have been labouring for years in Nicaragua to advance the interests of that magnificent country, which, indeed, needs help more than any other of the five States. Her debt alone remains unpaid. She has not kept faith with the Mosquitians according to the terms of the treaty of Managua, although the cash payment was only the pitiful sum (for a "*Sovereign State*") of £1000 per annum. However, I still cling to the hope that, when the Government of Nicaragua hears of the steps taken by Honduras to bring the greatly-needed population to her shores they will see how much their country has lost by not taking advantage of the opportunities I have placed in the way of their representatives, and that they will yet offer the committee inducement to reopen negociations, especially when they are clearly shown that in no other way can they expect to carry out the annexation of Mosquito.

The CHAIRMAN: At a subsequent meeting of your committee, it was suggested by Mr. Field that, in his position of Chairman of the Spanish American Bondholders, he was necessarily brought a good deal into communication with a Government which, under a treaty, had embodied a considerable portion of the land comprised in the original Mosquito Land Grant (I allude to the Republic of Honduras), and that he thought an arrangement based on the same terms as those proposed by your committee to the Nicaraguan Government would be favourably entertained by the Honduras representative in this country. Your committee, seeing at once the feasibility and the great advantages to accrue to all holders of land grants if this could be carried out, requested Mr. Field to put himself in communication with the representative of the Honduras Government, and to act in any negociations (based as before mentioned) as he might deem expedient; and I am happy to inform you that Mr. Field has, so far as is possible, succeeded in such negociations. I will now, therefore, again call on Mr. Field to state to the meeting the details of such negociations.

Mr. FIELD: My position as Chairman of the Committee of Spanish American Bondholders having brought me in contact with Don Carlos Gutierrez, the Minister Plenipotentiary of Honduras, I had formed a high opinion of his intelligence and liberality. I took occasion, therefore, to suggest to him that an opportunity was now presented for his country to place herself before the British public in the character of a generous and enlightened nation, by an act which would enlist the cordial good will of the numerous persons interested in the Mosquito grants; and, by exciting them to form an association for colonisation in Honduras, do much to advance the prosperity of that Republic. His Excellency entered upon the consideration of the matter in a most favourable spirit, and with the approval of the committee an agreement was drawn up for the concession of four millions of acres of land on certain conditions. This agreement Don Carlos was requested to sign on behalf of his Government, and subject, of course, to its ratification. He, however, considered it would be better for him to submit it first to his Government, and he has accordingly done so, with a strong recommendation in its favour. The answer from his Government may be expected in about two months. In the meantime, it is most desirable that steps should be taken to organise such of the Mosquito land claimants as shall be willing to take advantage of the proposed concession into a body whose respectability and *bona fides* shall justify its being accorded to them. With this view I apprehend that the first thing to be done is to call in the miscellaneous paper which now represents the various claims under the Mosquito grants, and to substitute for it one denomination of simple and intelligible certificates. A means of effecting this is now offered by the adoption of the course suggested at the public meeting of Oct. 10—that all claims be submitted to the adjudication of the Chairman of the Central American Association (Capt. Pim), and that he be authorised to issue (under the seal of the association) certificates embodying the result of his award. To cover the expenses, and as an earnest of the desire of the parties to enter into the proposed combination, the deposit of the securities should be accompanied by a small subscription, and the benefits of the expected concession ought to be limited to those claimants who shall register their securities and pay their subscription on or before some day to be fixed. Before I sit down I would just say that I have been mainly induced to take an interest in these matters from the desire I feel to help forward the development of the internal resources of Central American, for whose bondholders I have long been working, and from the strong conviction I entertain that at no distant day those countries, from their geographical position and their bounteous natural gifts, are destined to a prominent position among the nations of the world. Liberal and enlightened principles of government, aided by British capital, are all that are needed to bring about this happy consummation. The following correspondence has passed between Senor Gutierrez and myself:—

"*Jan.* 13, 1868.—EXCELLENT SIR: I have now the pleasure to hand you a translation of the agreement, for transmission to your Government. I also return the original, which your Excellency will have the goodness to sign and transmit to me, that I may get it signed by the committee. This being done, it is proposed to convene immediately a public meeting, at which steps may be taken for the organisation of the proposed company, so that no time may be lost in getting into operation on the receipt of the ratification of your Government. It is, of course, understood (as expressed by the agreement) that if the agreement be not approved and ratified neither the Government of Honduras nor the committee are in any way bound by its conditions.—JOHN FIELD."

COPY OF AGREEMENT.—Whereas in 1820, and since that time, certain grants of land within the Mosquito Territory have been conferred by the chief of that country upon British subjects, amounting in all to a total of 8,000,000 acres and whereas by a treaty between Great Britain and Honduras, dated April 18, 1860, the greater portion of the land from which said grants had been made, was declared to belong to Honduras, whereby the various claims became null and void in default of a valid title given by Honduras. Now, it is agreed between Don Carlos Gutierrez, Minister Plenipotentiary of the Republic of Honduras on the one part, and the holders of the aforesaid land grants on the other, that without acknowledging any claim, the Government of Honduras taking into consideration the hardship of the case of the holders of the Mosquito land grants, and desiring to afford them an opportunity of recovering the large sums of money expended by them at various times, being also desirous to encourage emigration by every means in its power, hereby concedes to such holders 4,000,000 acres of unoccupied lands of the Republic, such land to be selected in lots of 1,000,000 acres each, on the River Wanks, River Patook, Black River, and the River Roman respectively. The apportionment of the said 4,000,000 acres is to be made through the intervention of the Central American Association (Limited), the chairman of the association being empowered to adjudicate upon the titles of the several holders of the Mosquito Land Grants, and no claim not admitted by him, will be recognised as entitled to any benefit under this concession.

1.—The land to be granted in fee simple.

2.—The emigrants to be subject to the Colonisation Law of the Republic—copies of which are annexed.

3.—A quit rent of 1 cent per cleared acre to be paid annually to the Government.

4.—The holders undertake to form themselves into a public company without delay, and as soon as the above stipulations are agreed to by the Government to proceed forthwith to the colonisation and improvement of said lands. If such company shall not have been formed and operations commenced within 12 months from the date of the ratification of this agreement by the Honduras Government, the grant shall be null and void in respect of all land not actually taken possession of or claimed, with due formalities, on or before Jan. 1, 1873.

Senor Gutierrez engages immediately to submit the present agreement to the Supreme Government and Congress of Honduras, and their approval having been obtained, it shall then become binding on both parties.

"*London, Feb.* 4, 1868.—SIR,: I have duly perused the draft which you were good enough to send me of the agreement relative to the projected organisation of a company to colonise some part of our extensive waste lands, situated on the North Coast. I shall have much pleasure in forwarding it to the Government of the Republic, and to recommend it to its earliest and most serious consideration, and in due course I will inform you the instructions which his Excellency the President may think proper to forward to me in the matter. In the mean time, I beg to assure you that my Government, which has always been anxious to promote by all the means in its power the cultivation and colonisation of the valuable and exceedingly fertile regions of the Republic, will feel a peculiar pleasure in giving its most efficient support to a company, formed from among those persons who have already incurred a considerable expenditure on the faith of grants in the Territory of Mosquito, and who may be disposed to carry out energetically, and in good faith, an enterprise of so great an advantage to themselves, and utility to my country, the realisation of which my Government looks upon with the most lively interest.—CARLOS GUTIERREZ.

"To John Field, Esq."

The CHAIRMAN said that, having heard the statement Mr. Field, Capt. Pim, and myself, I will conclude my remarks by putting the following resolutions for your consideration:—

1.—That this meeting has heard with much satisfaction that there is reason to expect from the Government of Honduras a concession of land in that Republic on favourable conditions, and fully recognises the necessity of being prepared to take advantage of such concession at the earliest moment.

2.—That it is desirable that steps should be immediately taken to ascertain to what extent the holders of Mosquito Land Securities will be disposed to avail themselves of any agreement which shall be entered into with the Republic of Honduras, and that the benefits of such agreement, or concession, shall be limited to such holders as shall on or before May 12 next deposit with Capt. Bedford Pim, R.N., at the offices of the Central American Association, 4, Westminster-chambers, their claims or securities.

3.—That Captain Bedford Pim, R.N., is hereby requested and authorised to investigate the various claims and securities, and to determine the number of acres to which each claimant is respectively entitled in virtue of his claim or security, and which decision of Capt. Bedford Pim shall be binding and final, and without appeal.

4.—That in place of claims and securities brought in for registration, the Central American Association is hereby requested to issue certificates in the following form, under the seal of that company:—I, Capt. Bedford Pim, R.N., Chairman of the Central American Association (Limited), do hereby, in virtue of a resolution of a public meeting of the holders of Mosquito Land Securities, held on March 12, 1868, award and certify that the holder of this certificate is entitled to a claim of — acres of land in the original Mosquito Land Grants.

5.—That a subscription of 1s. 6d. per 1000 acres shall be paid at the time of taking up the certificates of award, the same to be paid to the credit of the committee.

6.—That all claimants who shall not have paid the said subscription of 1s. 6d. on or before June 1, shall be excluded from all participation in the benefits of the grants from the Honduras Government.

7.—That a meeting of the certificate holders shall be called (of which due notice shall be given), at which a committee shall be appointed to organise a company or association for giving due effect to any provisional agreements which shall be entered into by the existing committee with the Government of Honduras.

After remarks by Mr. JACOBS, Mr. GREEN, and Mr. BURTON, respecting the details of the resolutions, the CHAIRMAN put them to the meeting, and they were carried unanimously.

A vote of thanks to the Chairman and Committee, coupling with them the name of Capt. Bedford Pim, R.N., whose disinterested services cannot be too warmly acknowledged, was proposed by Mr. GREEN, seconded by Mr. BURTON, supported by Mr. JACOBS, and carried by acclamation.

## GREAT LAXEY MINING COMPANY.

The half-yearly general meeting of shareholders was held at the London Tavern, Bishopsgate-street, on Wednesday,

Mr. G. W. DUMBELL in the chair.

Mr. W. BECKWITH read the notice convening the meeting and the subjoined reports of the directors and managers. The accounts having been previously circulated were taken as read:—

In meeting the shareholders of Great Laxey, the directors are happy to be able to make their report a very short one. The mine holds on a steady course of prosperity, paying the same large dividends, and as some portions of the mineral ground are worked out other valuable discoveries are made, and the produce of the six months now accounted for exceeds that of any former half-year since the formation of this company; and the directors are assured that there is no reason to apprehend any falling off in the raisings of ore. The more detailed particulars of the works will be found in the report of the managers, which will be laid before the meeting. The directors regret to state that circumstances beyond their control have compelled them to change their London secretary of the company, and that Mr. William Allen has been appointed to that situation, in place of Mr. Henry Thompson, the late secretary. It only remains for the directors again to congratulate their fellow-shareholders upon the continued prosperity of the company, which, while offering very little inducement to speculators, secures to the shareholders a safe, profitable, and permanent investment. The directors yesterday declared the usual quarterly dividend of 10s. per share, payable in fourteen days.

MANAGERS' REPORT.

*March* 7.—The last half-year has continued to substantiate the steady progress of these mines. Our operations throughout, both above and below ground, have progressed satisfactorily, and resulted in ore returns slightly in excess of any before realised during a similar period. It will also have appeared from our ordinary reports that these satisfactory results have proceeded from the mine as a whole, rather than from any one special section of rich ore ground, which will be considered a safe pledge for their continuance in the future. In the deep mine at the main engine-shaft, after cutting out the ground for and fixing penthouse, &c., at the 220, we resumed sinking the shaft, and at this the deepest point in the mine—now 250 fathoms below the surface—the lode maintains its promising character, and is 5 ft. wide, worth 30*l.* per fathom. The 220 has been driven north 8 fms. in a large lode, which has been found by a cross-cut about 2 fms. from the present end to be 8 ft. wide, worth 50*l.* per fm.; and the further extension of this level to the Welch slide will make available for stopes a great deal of ore ground, now standing in whole to the 210, known to be especially rich for blende. In the ground north of the Welch shaft the 210 has been driven a considerable distance, but at this point the lode has been smaller and less productive than usual, not having exceeded in ore value 30*l.* per fm., and the present end being worth but 20*l.* per fathom. The 200 has not yet overtaken the run of ore ground setting down from the 190, which shows a more than usual rapid dip to the north; but the lode is daily improving, now 3 ft. wide, worth about 40*l.* per fathom. In the 190 drivage the lode continues productive, but has been of late much more valuable for blende than for lead, and is now 4 ft. wide, worth 60*l.* per fm.; and in a sump below this level, about 10 fms. from the present end, it is also worth 60*l.* per fm.; while in the stopes working in the roof of this level, though not so rich as formerly, it is of the average value of 80*l.* per fathom. The 180 has not yet improved as we expected, although the lode maintains its usual large size, but the probability is that the rich ground setting down from the 165 is yet, by its dip northwards, in advance of the present end, and will, therefore, be shortly met with. The 165 (our most advanced level in this run of ore ground setting down north of the Welch shaft) and the 155 have been our best discovery levels in this section of the mine during the last six months. The lode in the 165 has been from 8 to 9 ft. wide, varying in value from 50*l.* to 100*l.* per fm.; and the 155, on an average, about 70*l.* per fathom. We have latterly suspended the driving of the last-named level, and commenced to sink a sump close to the present end, in order to ventilate the 165, and open out this valuable ground for stopes. The end was up to a small slide when suspended, and consequently not looking so well, but, judging from the level below, we look for even more profitable ground being opened up when this drivage shall be carried north of the slide. The 145 has made fair progress towards Dumbell's, but without any discovery on the eastern vein, and as yet not in paying quantities on the western lode; the latter is, however, slowly and decidedly improving, and when carried up far enough to intersect Dumbell's slide will, we fully expect, become productive and valuable. In the copper ground south we have confined our operations mostly to two sets of stopes, one in the roof of the 190, and the other in the roof of the 165. The half-year's returns show that we have worked this ground to profit, and from the great height of ground which we now have available, a continuance of this result may reasonably be depended on. We have also completed a communication from the 90 to the 60, in a line upwards with the ground last referred to, with a view of opening it up to the corner shaft. In the 60, after cutting through the slide, and driving a cross-cut 5 fms. west, we intersected the lode, but as the end is yet under the influence of the slide we cannot positively state its value, beyond that it contains copper, and gives fair promise of good ground from this point to the corner shaft. The lead and blende deposits in the south ground, opened up by stopes from the roof and sole of the 60, near the main engine-shaft, continue to be good sources of supply, averaging from 40*l.* to 50*l.* per fm., while a winze sinking below the 60 is worth 70*l.* per fm.; and as we have here great reserves standing in almost whole down to the 100, and up to the 30, we may safely reckon for many years to come on its undiminished and profitable yield. At Dumbell's, the new engine-shaft has been carried down 4 fms. below the 125, in hard ground, and not so rich for ore as above, but for the last 3 ft. of sinking the lode has become easier, and is improving in value, now 7 ft. wide, worth 60*l.* per fm. The 125 north and south have both been holed to winzes sunk from the 110, by which means these levels are completely ventilated, and the whole of the ore ground between the winzes—about 40 fms.—opened up for stopes. The lode in the south level is of an average value of 40*l.* per fm., and in the north 80*l.* per fm. Some stopes are already commenced, and especially in those to the north we are confident of realising rich ore returns up to the 110. We have further driven the 110 since the last meeting 6 fms., besides cutting through and proving the lode in several places, and for the whole length it has been worth from 50*l.* to 80*l.* per fm., but the present forebreast is not so good, worth 30*l.* per fathom. The ground between this end and the Agneish shaft is what we now look to with much interest and hope, being new and instantly available as and when discoveries may be made. The stopes above the 110 have continued to yield well—especially those to the north, where we have also a great reserve of ground, and although some of the more advanced have, as was expected, fallen off in value, this rich ore deposit is dipping north and setting down below the 110 fm. level, yet, from the same cause, we may expect very soon to open up others, in similar ground, in the 125 and in increasing depth. Above the 110 the levels north and south appear to have got beyond the present run of ore ground, with the exception of the 60 north, where the lode is worth 80*l.* per fm. The various stopes from the roof of the 85 to the 50 have maintained, with very little change, their usual value, averaging about 60*l.* per fm., and this ground will not be exhausted for many years. From the 70 to the 80 south we have now holed a sump, which has opened out a quantity of rich ore ground for stoping, worth to beg'n with 150*l.* per fm. At Agneish the shaft is sunk to a 50 fm. level, and a cross-cut is being driven to intersect the lode, which we expect very shortly to do, when the sinking of the shaft will be resumed. At the Glen—where we have been driving an adit level cross-cut for the purpose of intersecting the Great Laxey lode in new ground, about half a mile to the south of the present mines—we have driven upwards of 60 fms. In a westerly direction, and according to a carefully taken average run of the Great Laxey lode, it appears we may yet have near 40 fms. to drive before the object of this trial will be proved. At Glen Roy the engine-shaft has been carried down to a 25 fathom level, which has also been driven out south 8 fms., and throughout the lode has shown a promising appearance, with occasional stones of lead and blende. The drivage south has been suspended for the present, in order to resume the sinking of the shaft, where the lode is 5 ft. wide, composed mainly of quartz, with blende and lead ore intermixed. We have also commenced a drivage north, as we judge the ore before discovered in the shaft will in all probability have set down, similarly to the main deposits of ore in this district, in that direction, and, therefore, hope shortly to establish this as a valuable portion of our property. On a review of the past half-year, we think the underground operations, as detailed in this report, will fully satisfy all reasonable expectations, and it will also be equally evident that the reserves throughout the mine still appear to be inexhaustible for many years to come. To continue to open up by more extended and deeper levels our already known runs of ore ground, is, therefore, mainly our present undertaking, and in doing so we are making very fair and steady progress.—R. ROWE, J. BARKELL.

The CHAIRMAN said that the accounts proved that the mine had yielded during the six months to which they referred more than had been produced in any corresponding period since the formation of the company, and that the increase, moreover, was greater than would appear from the simple comparison of the statements to January, 1867, and to January, 1868, respectively, because in the six months ending January, 1867, there was a difference with regard to 83 tons of lead in stock, amounting to 1902*l.* 0s. 2d., which would have to be deducted before comparing the two half-years. Making this allowance, the money produce for the half-year to January, 1867, would amount to 31,788*l.*, and to 34,825*l.* for the half-year to January, 1868, showing a difference of 3036*l.* of the latter, which was the largest of the two largest half-years they had ever had. And when shareholders considered that the company had made regular payment of the quarterly dividends, he thought they would admit the position of the company to be highly satisfactory, for whatever doubts might arise upon other points there could be no doubt as to the receipt and distribution of profits to the extent of 30,000*l.* per annum. The report of the managers was equally gratifying, so that he thought their position must be most satisfactory to those who sought not a speculation, but a permanent investment. In the report it was stated that in the 200 the run of ore ground had not been reached, but that the lode was daily improving. He was glad to say that he had subsequently received information to the effect that in two days' further driving it had improved to 80*l.* per fathom; the statements of the agent had, therefore, been fully borne out, and in a shorter time than was anticipated. As to the great expense of working the mine, he might observe that, to some extent, the expenses had increased with the extension of the workings, but that was not the sole cause of the increase, for it was to some extent due to allowance having been made for the change which had taken place in the labour market. Notwithstanding this fact, and although he considered there was no set of men better paid than the Laxey miners, he regretted to say that he had

on the previous day received a letter, containing a memorial, signed by a large number of miners, stating that they are not paid sufficient to live upon. This was a question which would have been entitled to the consideration of the directors, for he was convinced that neither the shareholders nor directors desired, and he was sure that he would be ashamed to stand up there, and talk of the prosperity of the company if he thought that they were base enough to starve their miners. But there was not a shadow of foundation for the charge, for there was no set of miners in the kingdom better paid than the miners at the Great Laxey Mine. Indeed, he had frequently complained that they were paying too much for their labour, for the wages averaged from 18s. 6d. to 21s. per week, and he believed that if you went through the whole of the mining districts of the kingdom they would not anywhere find the average so high. The memorial said that, "taking into consideration the high price of provisions," they were entitled to a rise, but that had been already taken into consideration. And, again, they claimed that the large profit the company are realising entitled them to an advance, but this had no bearing on the question, as they always paid the men full wages, even when the company was losing. They would reply to the memorial with temper and kindness, but also with firmness, because it was too well known that in three or four days they could supply the place of every man in Great Laxey at a lower price, for in many of the mining districts the men were not earning one-third of that amount. With regard to the accounts, he might explain that at the last meeting in the Isle of Man the auditors pointed out that the stock of blende was overstated, and suggested that the excess should be written off at the rate of 200 tons per half-year; the suggestion was being acted upon, but he should mention that the difference in figures did not affect their financial position in the slightest degree, because whatever is stated as stock in hand at the end of one half-year is deducted from the total amount in the following half-year's sales. He concluded by moving the reception and adoption of the reports and accounts.

Mr. STEPHENSON objected to their adoption, and stated that although he had enquired for the stock-book he had not been permitted to see it, and was convinced that 10,000*l.* worth of ore had been sold which had not been accounted for, so that they should have had a 15 per cent. dividend instead of 10 per cent. He would move that the accounts be not adopted.——The CHAIRMAN said that as Mr. Stephenson held but three shares he could neither propose a resolution nor vote, although he had the right to speak if the meeting were disposed to hear him. As to the statement that 10,000*l.* worth of ore had been sold and not accounted for, it was a simple impossibility. Mr. Stephenson was told at the Douglas meeting that if he laid his complaint before the directors it should be attended to, but he had never thought fit to do so, although every facility had been afforded him for investigating the accounts.——A SHAREHOLDER enquired what Mr. Stephenson was?——Mr. STEPHENSON said he was a gentleman; he was supported by his wife.——The SHAREHOLDER did not mean that, but wished to know what Mr. Stephenson's position was with regard to the company. Did he ever work for the company?——Mr. STEPHENSON said he had formerly worked for the company as a miner.

The CHAIRMAN explained that Mr. Stephenson was merely the tool of a party which was opposed to the directors. Originally an arrangement was made by an officer of the company, without the knowledge of the directors, by which Mr. Stephenson paid a certain amount annually to have the right of showing the great water-wheel, for which he made to every visitor a charge. As soon as the fact came to the knowledge of the directors, they at once repudiated it, and the consequence was that Mr. Stephenson was much annoyed. Another thing was that he had been perpetually litigating with Captain Rowe, and had always lost. These circumstances had led this patriotic individual, without a vote, to come over to the meeting, and endeavour unjustly to stigmatise the whole direction. As to the complaint about the accounts, he had told Mr. Stephenson that if he pointed out any supposed error in the accounts he would have it investigated; and he had given him full permission to examine the books. But as he was constantly demanding them at most inconvenient times, in the middle of business, the directors were compelled to limit his right to inspect them to one entire day after each pay, such day to be selected by Mr. Stephenson himself. He had made this day's inspection ever since, yet had failed to point out to the directors the error he alleged to exist.

It was then proposed, seconded, and carried unanimously by the meeting that Mr. Stephenson be not heard; and the reports and accounts were then unanimously adopted.

The CHAIRMAN said that the next business before the meeting was the consideration of a special resolution for altering the date of meeting. The half-yearly meetings of the company, as at present arranged, occur just at the spring and autumn equinox, which frequently renders the sea passage to and from the Isle of Man very disagreeable, and has prevented English shareholders attending the September meeting. The holding of the meetings in April and October would, therefore, he thought be a very desirable change, April being usually a fine month, and the weather in October usually being as fine as in any month in summer; and after a few remarks from other shareholders, it was resolved "That hereafter the half-yearly meetings of the shareholders of the company be held in London on the second Wednesday in April, and in the Isle of Man on the second Wednesday in October in each year."

Complimentary votes having been passed to Mr. William Tuxford for his great attention to the business of the company, and to the Chairman, directors, and managers, the proceedings terminated.

## SNAEFELL MINING COMPANY.

The half-yearly general meeting or shareholders was held at the London Tavern, on Thursday,—Mr. G. W. DUMBELL in the chair.

The SECRETARY read the notice convening the meeting.

The accounts, made up to Jan. 4, showed a balance of assets over liabilities of 1846*l.* 6s. 3d.

The CHAIRMAN said he would first call upon the secretary to read the report of the directors.

The SECRETARY read the directors' report, as follows:—

*March* 12.—In again meeting the shareholders of the Snaefell Mining Company, the directors have nothing very important to report upon, but they think that the report of the manager will be read with much interest, as showing that from very recent changes in the mine there is fair and reasonable ground for believing that valuable discoveries will be made, and that the Snaefell Mine will become a valuable property. The working of the mine has been, and continues to be, carried on with all the force that can be applied, and the directors hope that the next half-yearly meeting will enable them to give a much more satisfactory account of the mine.

The SECRETARY then read the report of the agent, as follows:—

*March* 6.—Since the general meeting, held in Douglas in September last, our engine-shaft has been sunk 6 fms., which has reached the 60. Casings, dividings, ladders, &c., have been fixed complete from the 40 to the bottom, and the machine now taking away the stuff without interruption. In addition to this, the 60 has been driven south from shaft 6 fms., and north about an equal distance, with a cross-cut at each end, to test the size and character of the lode. The south end, so far, has been most productive, having for about 4 fms. long a rib of blende, well mixed with lead about 6 in. wide. This change is evidently caused by an improved stratum, being at this point of a hard, firm nature; and I am fully convinced that settled ground is all that is required to cause the Snaefell lode to be very productive. In the north end, in the 60, we are never without ore, but it is disseminated more throughout the end. There is a marked improvement in the character of the lode here to that of the corresponding part in the 40, having in it some very beautiful "loughs;" and I hope as we advance underneath the several small bunches of ore passed through in the 40 we shall yet find further improvements. The work preparatory to sinking the engine-shaft below the 60 is progressing satisfactorily, and I hope to commence sinking for trip lodge in a few days. The 40 is now extended north from engine-shaft fully 40 fms., and communication made with the 25, which has thoroughly ventilated the mine. Here, as above stated, we have from time to time had several small bunches of ore; and although in itself of no very material value, still quite sufficient to induce us to expect better results, especially when the deeper levels have been driven up underneath. The north adit level, during the past half-year, has been driven nearly 40 fms., but nothing of any importance has been discovered. As we shall require additional hands to drive the 60 fm. level ends as soon as we recommence sinking the engine-shaft below the 60, I would suggest that this adit level be stopped for the present; we can return to it again at any more favourable opportunity. The south adit level has been driven 22 fms. during the last six months, with but very little change. Here we are pushing to get back in contact with the Great Laxey cross-courses, which we consider of very great importance, having proved so valuable in that mine; and although a rather expensive operation, and extending over a long period, yet, when we look at the results obtained by our rich neighbour, we are led to view this as being one of the most important trials in this neighbourhood. In conclusion, I can only repeat that I am fully persuaded that as soon as we reach the settled stratum of this district we shall establish a productive mine, and no time will be lost in reaching that important object, which can only be accomplished by sinking our engine-shaft and prosecuting the mine at a still greater depth. Our machinery is in perfect good order, and doing its work well.—WILLIAM KITTO.

The CHAIRMAN said it would be seen by the report of the directors there was reason to hope and believe that by the next half-yearly meeting they would be in a position to render a more satisfactory account; and he thought those who had heard the report of Capt. W. Kitto read would agree that the directors were justified in stating what they had in their report. A change had just taken place in the mine at the north end of the 60, at which point the ore ground was of a more scattered description, and less settled in body, than in the south end. Within the last few days they had cut into what was called a "lough," which in Cornwall, he believed, was designated a "vugh"—that is, a certain amount of opening in the lode, and which in Great Laxey they always regarded as a most encouraging feature. Capt. Kitto told them that, from the fact of having broken into this "lough," when the 60 fathom level was driven north underneath the small branch of ore discovered in the 40 fathom level, there was reasonable ground for expecting satisfactory results. An important change in the ground had taken place as compared with that in the 40, for although the 40 was in good ore ground, it was not of that description to induce the hope that a large deposit would be found at that depth. It required that hardness of character which was found in Great Laxey, with which mine they hoped Snaefell would some day successfully vie. Great Laxey was not a soft mine; and, therefore, it was expensive to work, but when the ground became hard it was always a sure indication that a better quality of ore would be found. Capt. Kitto also informed them that in driving the south adit they would intersect a cross-course, which, as in Laxey, they had reason to hope would lead to some valuable discoveries. The directors, of course, founded their information upon what they obtained from the manager, and fully believing Capt. Kitto had not over-stated the facts of the case, he had led the directors to conclude that some discoveries of importance were likely soon to take place in their mine. Capt. Kitto said that he believed as soon as settled ground was reached they would have a productive mine, and that no time would be lost in reaching that object. At the last meeting, held in London, the question arose as to continuing the sinking of the engine-shaft, when it having been agreed that the work should be resumed, the shaft had since been sunk and the mine otherwise prosecuted with due dispatch. Had not the same means of development been employed in Great Laxey, that mine, instead of being a great success, would now be worthless; and it was due to Capt. Kitto to state that from the beginning he had earnestly advocated the continuance of the engine-shaft. He then moved that the reports and balance-sheet be received and adopted.——Mr. CURRIE seconded the proposition.

The CHAIRMAN, in reply to a question, stated that, should more capital be required than that at present in the hands of the directors, which he hoped would not be the case, they had power to issue 10,000 more shares. The accounts showed that about 1400*l.* had been expended during the last six months, and there was certainly no reason to expect that during the current half-year the outlay would be less, but in the meantime something of importance might be met with. As far as he was personally concerned, he was always a strong advocate for spirited mining, as being the most probable to lead to success. Should a necessity arise for more capital, the subject would be notified to the shareholders by a special circular.——The reports and balance-sheet were received and adopted.

The CHAIRMAN proposed that the best thanks of the shareholders be accorded to Captain William Kitto for the energy and prudence he had displayed in the management of the mine. In thus testifying to the energy and skill of Captain Kitto, he (the Chairman) was not paying him a mere compliment, for he believed he was justly entitled to it, employing, as he did, his whole energy in carrying out the development of the property.——Mr. NOBLE having seconded the proposition, it was put and carried unanimously.

Capt. W. KITTO appropriately acknowledged the vote, stating it would continue to be his undeviating aim to bring about successful results in as speedy and economical a manner as possible. He thought there was good reason to expect a profitable mine would be opened out.

The CHAIRMAN explained that the half-yearly meetings of the company as at present arranged occur just at the spring and autumn equinox, which frequently render the sea passage to and from the Isle of Man very disagreeable, and had prevented English shareholders attending the September meeting. He proposed that so much of the Deed of Association as requires the half-yearly meetings of the company to take place on the second Thursday in March, and the second Friday in September, be rescinded.——Mr. CURRIE seconded the proposition, which was put and carried unanimously.

The CHAIRMAN then proposed that hereafter the half-yearly meetings of the shareholders of the company be held in London on the second Thursday in April, and in the Isle of Man on the second Friday in October in each year.

Capt. ROWE seconded the proposition, which was also carried unanimously.

A vote of thanks to the Chairman terminated the proceedings.

## WEST CARADON MINING COMPANY.

A general meeting of the shareholders was held at the company's office, Bishopsgate-street Within, on Tuesday,

Mr. W. NICHOLSON in the chair.

Mr. W. J. LAVINGTON (the secretary) having read the notice convening the meeting, the minutes of the last were read and confirmed.

The agents' report was read, as follows:—

*March* 7.—Elliott's engine-shaft is down to the 180 perpendicular, where we shall have to drive about 8 fms. west to cut the main cross-course; we shall then have to drive south on the same about 28 fms.; the ground will be very easy for driving, and will quickly reach where we expect that Allen's and Vivian's lodes will form a junction, and will, in our opinion, be found productive. Allen's lode in the 170, east of main cross-course, we have driven on 43 fms.; within the last 20 fms. the lode has shown very promising appearances, producing very fine stones of yellow copper ore. The 155 east, on this lode, in the last 8 fms. has yielded in places from 1 to 1½ ton of ore per fm.; these ends are about an equal distance from the main cross-course, and are within 32 fms. to the boundary, where they have in South Caradon a good course of ore coming towards us, worth full 4 tons per fm. In order that no time be lost in pushing on these ends most vigorously, we are putting up a rise in the back of the 170, and when holed to the 155 we shall then have sufficient air to drive both of these ends to the boundary. Clymo's lode in the 128, west of cross-cut, is driven 60 fms.; in this drivage we intersected a small cross-course, and about the same before and after for over 10 fms. in length the country and lode have been in a very disordered state—soft decomposed granite, which caused us to timber the level; however, it seems now to be in a more settled channel of ground; the lode is 2 ft. wide, consisting of quartz, capel, with occasional stones of copper ore; we are pushing on this level as quickly as possible, seeing we have a long run of ground before us for 240 fms. in length, and nearly all in whole ground to surface; we still entertain a high opinion it will lead to something good. We are putting up a rise in the back of this level within 22 fms. of the cross-cut, which is up 5 fms., and in the extreme back it is a very pretty looking lode, containing red oxide and green carbonate of copper, and is worth 8*l.* per fm.; we shall continue to put up this rise in order to prove this high piece of ground. Jope's lode in the 128, west of the little cross-course, is driven about 10 fms. through moderate tribute ground, worth 9*l.* per fm.; the lode in the present end is split up in branches; no doubt when they come together we shall have a more productive lode. A winze has been communicated from the 116 to this level, and caused good ventilation. The 116, on this lode, is driven west of the little cross-course 27 fms.; this end has passed through ground worth in places from 8*l.* to 10*l.* per fm.; the present end is worth 9*l.* per fm. We have a winze sinking in bottom of the 104 on tribute, 6 fms. in advance of this end; it is down 6 fms., and for the whole depth will average 10*l.* per fm. Marina's shaft intersected the lode about 18 fms. below the surface, and at this point the water became too powerful to be kept by the aid of a horse-whim, consequently we cut a cistern-plat, fixed plunger-lift, cut ground for angle-bob, also cut a plat for lodging the stuff, and set Pryor's engine to work, which is keeping the water with ease. The sinking of this shaft is now going on rapidly by nine men, and is down on the course of the lode 4 fms., and where the lode is cut into is about 1½ ft. wide, containing a pretty deal of mundic, peach, quartz, and spotted with copper ore, and is presenting such a kindly appearance as might be expected at this depth. You will perceive by the foregoing remarks that our mine is in a good working position, and that Elliott's engine-shaft has reached the 180, where it cannot be doubted but what Vivian's and Allen's lodes will be together, and from what we have seen at such intersections in this mine, we have a right to expect to see the lode productive. Looking at the 170 and 155, on Allen's lode, going towards South Caradon, where they have a good course of ore close to their boundary, the chances in this direction seem to be exceedingly good. At Marina's we have completed all the necessary work required in fixing pitwork, &c., and the shaft is now in full course of sinking, and when down to such a depth as where lodes are generally found productive, a cross-cut will be set to drive on a cross course, which is in close proximity with the shaft to intersect other lodes known to exist both north and south. We cannot but again repeat that this piece of unexplored ground when developed is likely to open out an entire new mine, and we cannot see why it should not turn out to be good and lasting. We have employed both underground and at surface 149 hands.—W. JOHNS, N. RICHARDS.

The statement of accounts showed a loss on the four months of 1736*l.* 7s. 8d., and of liabilities over assets of 1759*l.* 5s.

The CHAIRMAN, in moving the adoption of the report and accounts, said that he regretted that the operations at the deeper levels had not proved more productive, their anticipations to the present not having been realised. They had, however, the shallower workings at Marina's, and Capt. Johns expected that in about four months they would be down to the 30, and could then drive levels in productive ground. He (the Chairman) thought that this course would be the best to adopt, as by stopping the deep workings they would effect a considerable saving. Capt. Johns was, however, present, and could give every information respecting their present position.

Capt. JOHNS explained by means of the working plan the present position of the South Caradon lode, which has during the past few weeks turned round, but as the South Caradon level was within 5 fms. of their boundary, and from the specimens which were on the table, one of which he broke from the South Caradon lode last Saturday, and which is identical with the lode in their level, he (Capt. Johns) could not but think that it would at the present time be a great mistake to stop any of the deeper workings.——In reply to Mr. Milford, Capt. JOHNS said that the underlie of the South Caradon lode must bring it into West Caradon sett.

Mr. P. WATSON said it was hard to bear the loss, but the shareholders must remember that the price of copper, which was now lower than at any time during the past 90 years, had a great deal to do with it. In his (Mr. Watson's) opinion, West Caradon was one of the cheapest worked mines in the county. The merchants' bills were very light, and every economy exercised by the management. Now, because the mine was poor, it was proposed to stop the deep working, from which they had every reason to expect good returns. Such a step, in his opinion, would be sheer madness. Captain Johns had always been of the opinion that by the sinking of Elliott's shaft they would open up as good a mine as South Caradon; and if they now stopped, all the money they had expended would be thrown away. From the accounts, it appeared that a call of 30s. or 35s. would be necessary, and for his part he had no objection to pay calls if he saw any chance of the money being returned.

The report and accounts were passed, and a call of 30s. per share was made.

In reply to a shareholder, the SECRETARY stated there was but 74*l.* in arrear, and that was entirely on the last call.

On the motion of a SHAREHOLDER, it was resolved that the committee have the mine inspected by a disinterested agent, whose report be printed and circulated amongst the shareholders.

The committee were re-elected, and a vote of thanks to the Chairman terminated the proceedings.

[For remainder of Meetings see to-day's Journal.]

## FOREIGN MINES.

VAL ANTIGORIA.—T. Roberts, March 8: The remittance of gold made to the office is about 59 ozs. The lode in the adit end north is worth for gold 16 dwts. per ton. The lode in No. 1 winze yields 3 tons of ore per fathom, worth for gold 12 dwts. per ton. The lode in the No. 30 end, south of the shaft, is worth 3 tons of ore per fathom. The lode in the main shaft is worth 1 oz. of gold per ton of ore. The erection of the new crusher and machine-house is progressing satisfactorily. The water-wheel for No. 3 mill-house is finished and in its place, and in the course of a few weeks we hope to add two new mills to our effective force.

PESTARENA UNITED.—Capts. T. Roberts, T. Warne, J. Roberts, J. Mitchell, March 8: The remittance of gold to Feb. 29, made to office, is 788 ozs. 17 dwts., value about 2700*l.* Although this remittance, made for what was heretofore an entirely unproductive part of the year, is most satisfactory, it would have been augmented had it not been for the scarcity of water in the Anza, and for the repairs to a wheel in the Val Toppa establishment. The weather is still frosty, but we look for a considerable increase over our present gold production during this month, and as soon as the water in the Anza increases.—Pestarena: The course of ore being worked in the Peschiera, in the 75 fathom level, is still worth for gold 100*l.* per fathom. All the stopes in this and the Aqua Vite Mine continue productive, as last reported. The new pumping turbine is in its place; what remains to be done for the completion of this machine is the fixing of a column of pipes in the shaft for conducting water to it. We are sending regularly ore from Pestarena to Cieppemorelli by the ropes, and the men are gradually gaining practice. The snow is now quickly disappearing from the ground, and we shall, therefore, be soon in a condition to increase the number of men engaged in the Morghen tramway.—Battigio: We have commenced the construction of the floors at Fornaletti. The new furnace for making our own rough castings will shortly be completed. At the mine we have driven in the Cavetta level through a deposit of ore, which yielded 3 ozs. of gold per ton. The stopes in the side lode in this level are worth for gold 25*l.* per fm. The lode in the back of Cava Vecchia level is 3 ft. wide, worth for gold 15*l.* per fm.—Val Toppa: The new lode discovered in the cross-cut from Fisher's level is composed of auriferous quartz, blende, galena, and iron pyrites; we have cut into this lode already about 9 ft., and have not as yet reached the footwall. This is a most important and valuable discovery. The various stopes in the back and bottom of Fisher's level continue to be on lodes from 6 to 13 ft. wide. At the Mermo Rosso level, the lode in the end driving north yields ore worth 1 oz. of gold per ton. In view of the improvements which have taken place at Pestarena on the side lodes, at Battigio in the Cavetta level, and at Val Toppa (through the discovery of the new lode), we can conscientiously state that our prospects are the present time most promising.

ALAMILLOS.—Feb. 29: The 3d level, east of La Magdalena shaft, being in the main slide, is suspended. The lode in the 3d level, east of San Enrique shaft, is very regular; at present there is a good lode in the back of the end, yielding ½ ton of ore per fm. In the 4th level, east of La Magdalena shaft, the lode, which is very large, and of a kindly appearance, produces 1½ ton of ore per fathom. The 4th level, west of La Magdalena shaft, yields 1¼ ton per fathom; the lode is very wide, composed chiefly of carbonate of lime and lead ore. The lode in the 4th level, east of Taylor's engine-shaft, is small and unproductive. In the 5th level, east of Taylor's engine-shaft, the lode, which produces ½ ton of ore per fm., has failed during the last few days. The lode in the 5th level, west of Taylor's shaft, yields ½ ton per fathom; the lode here is smaller than it was. The lode in the 4th level, west of San Adriano shaft, has improved, and now produces 1¼ ton of ore per fm. A good length of ore ground was opened last month. In the 3d level, west of San Yago shaft, the lode, which produces 1¼ ton per fathom, is again improving, and letting out water freely. The lode in the 3d level, east of Crosby's engine-shaft, is small, producing ½ ton of ore per fathom. The ground is hard for driving. In the 2d level, west of Crosby's cross-cut, the lode, which yields 1 ton of ore per fm., is of a promising character, and has opened good tribute ground lately.—Shafts and Winzes: The sinking of La Magdalena shaft towards a 5th level is commenced, and will be urged on as fast as possible. Berdu's winze, below the 3d level, holed to the 4th level; the lode has been good throughout the sink, and it now yields 1¼ ton of ore per fm. Fernandez winze will shortly reach the depth of the 4th level; the lode is poor at present. The tribute department produced the estimated quantity of ore in the past month, and has not undergone any alteration worthy of notice. The machinery and all surface operations are going on very regularly. We estimate the returns for March at 250 tons.

LINARES.—Feb. 29: West of Engine-Shaft: The 110 fm. level, west of engine-shaft, produces ½ ton of ore per fm. The lode is very small, and appears to be thrown out of its course by a strong joint. The 75, west of Warne's engine-shaft, yields 1½ ton per fm. There is a very large and strong lode in the bottom of the end, but it is not so good in the upper part. In the 75, east of Crosby's shaft, the lode which is getting very small, produces 1 ton of ore per fm. The lode in the 31, east of San Francisco's shaft, is small and disarranged, producing ½ ton of ore per fm.—East of Engine-Shaft: The lode in the 95, east of Taylor's cross-cut, on south lode, is very wide, chiefly composed of carbonate of lime, spotted throughout with lead, and yielding 1 ton of ore per fm. The lode in the 95, east of Taylor's shaft, on north lode, is harder and less productive than it was. In the 95, east of No. 154 winze, on north lode, the lode is very large and of a promising appearance, and opening tribute ground; it yields now 1 ton of ore per fm.—Shaft and Winzes: Warne's engine-shaft, below the 75, yields 2½ tons of ore per fm. The lode has improved in this sink, and is of a very kindly and productive nature. The lode in No. 155 winze, below the 61, produces ½ ton of ore per fm. No. 156 winze, below the 61, is going down in a very compact lode, yielding 2½ tons per fm. The stopes have not undergone any unusual alteration in the past month, and continue to yield a fair average quantity of ore; the surface and all other works are going on with the usual regularity. We estimate the raisings for March at 278 tons.—Quiniento's Mine: In Taylor's engine-shaft, sinking below the 20 fm. level, the ground is getting harder for sinking, and the progress is consequently slow; there is a very good lode in the western end of the shaft, but it does not come forth far enough in the sink to give a value to the part we are carrying. We have sunk Addis's shaft some 40 fms. deep from surface, and are at present dry at the bottom, which is still in old working. This will be cleared and squared down until we again come upon water.

FORTUNA.—Feb. 29: Canada Incosa Mine: In the 100, west of O'Shea's shaft, the ground is a little easier than it has been, and the men are making good progress in driving. The 90, west of Judd's shaft, produces 2 tons of lead ore per fathom. The lode in the 80, west of Judd's, is small and valueless. The lode in the 70, east of Carro's shaft, improves as we get out of the influence of the cross-course; it now yields 1¾ ton of ore per fathom.—South Lode: In the 50, east of San Pedro shaft, the lode is large, and has a kindly appearance, yielding ¾ ton of ore per fathom. The lode in the 50, west of San Pedro shaft, is divided into several small branches. The 40, west of San Pedro shaft, yields ½ ton of ore per fathom. The lode in Gomez' winze, sinking below the 30, contains small quantities of lead.—Los Solidos Mine: The lode in the 100, west of Morris's engine-shaft, is now quite clear of the elvan course, and we hope soon to reach the point of the lode. In the 90, west of Morris's shaft, we do not expect much improvement until we reach the cross-course in advance of us. The 65, west of San Carlos shaft, yields ½ ton of ore per fathom; the lode is still very small, and the ground hard. The 100, east of Morris's shaft, produces ¾ ton of ore per fathom; this end is communicated with Gonzale's winze, and the men are driving east of same. The 90, east of Cox's shaft, which, until the last few days, has been passing through a splendid piece of ore ground, is now quite poor. The lode in the 75, west of San Pablo's shaft, is very compact and solid, and yields 3 tons of ore per fathom. The 65, east of San Miguel's shaft, has passed through several small strings of lead.—Shafts and Winzes: In Buenos Amigos shaft, below the 75, the ground is easier than it has been, and the men are getting on well with sinking. The lode produces 2 tons of ore per fathom. Carrascosa's winze, below the 75, yields 1¾ ton per fathom; this lode has rather declined during the last few days, both in size and value.

PONTGIBAUD.—Capt. W. H. Rickard, March 2: The cross-cut in the 125 metre level, south from Richards's shaft, having met with nothing of value, we have suspended it, and set to rise in the back of the lode, which opens tribute ground. The intermediate level south from the rise, north of shaft, has opened a little tribute ground of rather low quality. The 80 metre level rise, south of shaft, is unproductive. The 60 south produces stones of ore in quartz. The 40 metre level south yields ¾ ton of ore per fathom. The winze in the bottom of this level, over the 60 metre level end, is unproductive. The stollen north of Virginie's shaft, on Virginie's lode, presents a kindly appearance, but produces no ore of value. The stolien south of whim-shaft is in disordered ground, and poor. We have 10 stopes working in this mine, and 22 tribute pitches, yielding together about the usual quantity of ore.—La Grange: The 80 metre level north yields a little low quality saving work. The 60 north opens tribute ground of low quality. There are three stopes and seven tribute pitches, yielding a large quantity of coarse work.—La Brousse: The sinking of Basset's shaft below the 80 goes on pretty well. The 80 metre level, south of Basset's shaft, yields 2½ tons per fathom. The 40 south yields ½ ton per fathom. The 40, on the eastern part, yields 2 tons per fathom. The 40 fm. level cross-cut east is in hard, sparey ground. The 20 south is unproductive. The winze sinking below this level yields ¾ ton per fathom. Our tribute pitches in this mine continue to yield well. We have commenced a surface trial by sinking on the back of a strong lode to the west of this mine, which we hope may lead to some discovery.—Pranal: The 70 metre level cross-cut continues hard.—St. Matthew's Lode: The 50 north yields ¾ ton of ore per fathom; the same level south yields ½ ton per fathom. The 50, north and south of the cross-cut, is unproductive. The 30 south yields ¾ ton of ore per fathom. The 30 north yields ½ ton of ore per fathom. Our nine tribute pitches yield well. Our dressing during the past month has gone on well, but in the out-door work little has been done; we hope, however, from this time forward to go on without interruption. Our samplings have amounted to 367½ tons.

VAL SASSAM.—T. Rickard, March 9: Ursera: The Cantina end was driven 2·70 metres in February, through ground producing ore to the extent of about 10*l.* per fm. In the present end the lode is less orey than it has been; the bargain is taken again by four men, at 90 frs. per metre, and 1*l.* per month for saving the ore. The stopes in this level are, as we have always hoped they would, giving signs of improvement. During the present month they will turn out a nice pile of work. The Cantina cross-cut eastward was driven 1·70 metres during the month, still in the limestone. The Delpozzo rise was lengthened 3·90 metres; re-set to four men, at 80 frs. per metre. We hope to strike through to the bottom in the course of the present month. We have sampled 7635 kilogrammes (about 7 tons) of Ursera ore, and have forwarded it to Swansea.

LUSITANIAN.—Jan. 28: Palhal Mine—Basto's Lode: In Taylor's engine-shaft, sinking below the 110, the lode is worth 4 tons of ore per fathom. The lode in Rives's shaft, below the 90, is 2 ft. wide, composed of flookan. The 110, east of Taylor's shaft, yields 2 tons of ore per fathom. The '10, west of Taylor's, is worth 1 ton per fathom. The lode in the 110, west of Taylor's, on south lode, is 4 ft. wide, composed of flookan, intermixed with country; at this point we have a small branch going off in the north side, which may be what we call Basto's lode, it being composed of flookan and a little stain of copper. The lode in the 100, east of Taylor's, is 1 ft. wide, composed of flookan. The 90, east of Rives's shaft, is composed of flookan and stones of ore; and the 70, east of Rives's, is of a very similar character. The lode in the 70, west of the slide, is 1½ foot wide, composed of quartz, and containing at times small quantities of lead and copper ore. The 38 and the 18, west of Perez' shaft, are each formed of flookan. The lode in the adit is small, yielding ⅓ ton of ore per fathom.—Levels on the Caunter Lode: The 90, east of the slide, is formed of flookan. The lode in the 80 is 4½ feet wide, yielding 1½ ton of ore per fathom.—Levels on the Ponte Lode: The 28, east of the slide, is composed of quartz and spots of lead.—Level on Great Caunter Lode: The lode in the 60 is small, composed of flookan.—Cross-Cuts: The cross-cuts present no change since our last report.—Winzes; No. 67 winze, below the 100, east of Taylor's, yields ½ ton of ore per fathom. No. 65 winze produces stones of ore. The stopes throughout the mine remain without material change.—Carvalhal Mine—Great Lode: The lode in the 40, east of incline shaft, is 3 feet wide, composed of quartz and mundic, with stones of lead and blende. The 40, west of incline shaft, yields ¼ ton of blende per fathom. The 30 east produces 2 tons of lead per fathom. The lode in the 30 west is 4 feet wide, being a mixture of quartz and country, with large quantities of mundic. The lode in the 20 east is 6 ft. wide, composed of quartz and lead, worth ¾ ton per fathom. The 10, east of incline shaft, and the 10, west of winze, east of incline shaft, are communicated; they contain stones of lead. The rise above the 30, east of incline shaft, is composed of quartz. The stopes on the great lode, above the 20, and those above the 30, are worth respectively 1 ton and ½ ton per fathom.

RIGHT OF SETT-OFF.—In an action for calls brought against a shareholder of a limited liability company which is being voluntarily wound up, not under the supervision of the Court, the shareholder is entitled to set off a debt due to him from the company. This was the holding of the Court of Common Pleas, in the case of the Brighton Arcade Company (Limited) *v.* Dowling, the Court being of opinion that the decision of the Lord Chancellor and of the Lords Justices, in Grissell's case (*re* Overend, Gurney, and Co.), "that a shareholder in a limited company, who is also a creditor of the company, is not, in the event of the company being wound up, entitled to set off the debt due to him against the calls," did not apply to a voluntary liquidation, in which no application had been made for the supervision of the Court of Chancery.

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